THE SOCIETY FOR THE ADVANCEMENT OF MANAGEMENT

JOURNAL

Annual Conference Papers

and

Outline of a Plan for Teaching Scientific Management

Engineering Societies Building
29 W. Thirty-Ninth St.
New York, N. Y.

JANUARY, 1937 **VOL. II, No. 1**

EXECUTIVE COUNCIL

Board of Directors

President and Director.....Wm. H. Gesell
Vice-President and Director...Charles G. Smith
Secretary and Director.....David B. Porter
Treasurer and Director.....Otto F. Taylor
Director.....G. W. Barnwell
Director.....J. A. Carlin
Director.....H. P. Dutton
Director.....K. MacGrath
Director.....H. S. Person

Presidents of Chapters

Boston.....Archie Williams
Chicago.....Billy E. Goetz
Detroit.....J. A. Carlin
New York.....Walter K. Porzer
Northern New Jersey.....Frank G. Atkinson
Philadelphia.....Jas. A. Parton
Washington, D. C.....John M. Carmody

and

Vice-Presidents in Charge of Divisions

Technical Development.....R. W. Allen
Student Branches.....G. W. Barnwell
Education.....Hugo Diemer
Chapter Organization.....M. A. Dittmar
Western Region.....H. P. Dutton
Government.....Perry A. Fellows
Professional Development.....W. S. Ford
Co-ordination.....John J. Furia
Standardization.....John Gaillard
Home Management.....L. M. Gilbreth
International Co-operation.....Harry A. Hopf
Eastern Region.....Ray M. Hudson
Finance.....Sam. A. Lewisohn
Utility Management.....Robert T. Livingston
Costs.....John R. Morse
Time and Motion Study.....W. R. Mullee
Membership.....John B. Payne
Management Philosophy.....H. S. Person
Marketing.....Frank M. Surface
Personnel.....Ordway Tead

ADVISORY COUNCIL

J. G. Aldrich
D. M. Bates
Carle M. Bigelow
Fessenden S. Blanchard
Ernest G. Brown
Percy S. Brown
Robert W. Bruere
John M. Carmody
Helen A. Carnes
Edward W. Clark, 3d
Myron H. Clark
Morris L. Cooke
Arthur T. Davenport
Henry S. Dennison
Albion N. Doe
Richard A. Feiss
Benjamin A. Franklin
George E. Frazer
Walter D. Fuller
Francis Goodell
Chas. B. Gordy
Hudson B. Hastings
J. C. Heckman
Milton C. Herrmann
Harry Arthur Hopf
Willard E. Hotchkiss
Ray M. Hudson
W. M. C. Kimber
B. Eugenia Lies
J. W. Marder
Dwight V. Merrick
A. H. Mogensen
Hadar Ortman
V. M. Palmer
Joseph W. Roe
Henry Addison Schell
F. R. Shanley
Henry Wood Shelton
John C. Shover
Ida M. Tarbell
Sanford E. Thompson
Mary van Kleeck
F. W. Van Ness
L. W. Wallace
A. Weinstein
John H. Williams

Editorial Committee

John F. Campbell
Harlow S. Person
Henry P. Dutton
David B. Porter
John J. Furia
Ordway Tead

Executive Secretary and Assistant Editor

Evelyn Buckley, Room 102, 29 West 39th Street, New York, N. Y.

THE SOCIETY FOR THE ADVANCEMENT OF MANAGEMENT JOURNAL *

Published by The Society for the Advancement of Management, Inc., at

Engineering Societies Building
29 West Thirty-Ninth St., New York, N. Y.

The Journal of The Society for the Advancement of Management is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.

The reprint of extracts up to 50 per cent of the whole of any article herein is authorized, provided the source is mentioned. In return the Society appreciates complimentary copies of the publications containing such reprints. Permission to reprint more than 50 per cent must be arranged through the office of the Society.

Published every other month. Per year to Members $2.50; to others $3.00. This issue $.75.

Entered as second-class matter at the Post Office at New York, N. Y., under the Act of March 3, 1879.

* Formerly the BULLETIN OF THE TAYLOR SOCIETY AND OF THE SOCIETY OF INDUSTRIAL ENGINEERS

Vol. II JANUARY, 1937 No. 1

Contents

Comment 1

Enlarging the National Income by Redistribution 2
By George Soule

Measuring the Effect of Executive Acts . 5
By A. B. Segur

Executive Compensation: A Problem in Incentives 15
By Harry Arthur Hopf

Prosperity, Profits and Payrolls 23
By Ordway Tead

Outline of a Plan for Teaching Scientific Management 28
By King Hathaway

Reviews 30

Comment

A SPLENDID resurgence of interest, enthusiasm and concern for management problems was the outstanding characteristic of our December annual conference. It was deliberately planned to assure the maximum collaboration among management groups with kindred interests. And as a result not only did we conduct meetings jointly with the Management Section of The American Society of Mechanical Engineers, but additional joint sessions were conducted with the Personnel Research Federation.

The result in terms of attendance was gratifying. Nearly two hundred non-members registered. The result in terms of a sharing of intellectual efforts was significant.

The available papers from the several meetings will be published in the journals of the co-operating societies.

* * * * *

A new administration is now to be heartily welcomed and wished success in the conduct of the Society's affairs. Mr. William H. Gesell, Vice-President of Lehn & Fink, Inc., is now our President. In addition to this office, he holds the chairmanship of the National Management Council and he has for years been prominent in the affairs of the American Chemical Society. He thus brings with his leadership a wide and successfull experience in both managerial and association activity.

In the next issue we hope to present his own statement as to policy and prospects as these will guide developments in the next year.

We also welcome into new places on the Board of Directors J. A. Carlin, Manager, Hutto Machine Division, The Carborundum Company, Detroit, Michigan and Kenneth MacGrath, Production Manager, Eclipse Aviation Corporation, East Orange, New Jersey.

* * * * *

The Gilbreth medal was instituted to accord recognition of meritorious service to the cause of management. The award has previously been made to Mrs. Lillian M. Gilbreth and the Honorable Herbert Hoover. This year, upon recommendation of the committee, the medal was presented at our annual dinner to Ordway Tead, the retiring President of the Society.

Enlarging the National Income by Redistribution[1]

By GEORGE SOULE
An Editor, *The New Republic*, New York

Is there a way to a totally larger national income in which* all *may enjoy an increasing share?

IN RECENT years the more progressive professional economists have been investigating a theory long held by certain unorthodox commentators on economic affairs: the theory that a redistribution of national income in favor of wage-earners and others in the lower income brackets is not only desirable for social reasons, but would also help to enlarge and stabilize the total income. In the process of investigation they have refined and elaborated the theory, attempting to state it with more precision and to fill in its outlines with quantitative data. Among these economists the most prominent are J. M. Keynes of Cambridge University in Great Britain and Dr. Harold G.Moulton of the Brookings Institution in the United States. The approaches and conclusions of these two authorities differ, and neither has succeeded in formulating his theory so as to convince the traditional economists. Nevertheless both have opened up new fields for investigation and experiment, and have succeeded in putting the classicists on the defensive.

The classical theory holds, of course, that the division of the national income as between wages and profits, and the division of its use as between investment in new productive equipment and the purchase of consumers' goods, have no effect upon the volume of economic activity. Profits, like wages, are spent for something, and both enter the flow of purchasing power. Investment in new capital equipment provides work and wages just as much as money spent for consumers' goods. Indeed, the less that is saved and spent upon plant and equipment, the slower the growth of the national income. Any division of the national income that results from natural economic forces is compatible with steady operation, according to this theory. Fluctuations arise from other causes.

Dr. Moulton's contrary hypothesis is probably familiar to most of you, but in order to open the discussion it is well to summarize it briefly. It first sets forth the thesis that the productive capacity of the United States has never been fully utilized even at the height of prosperity; in 1929 we might have produced a fifth more than we did, without any changes in our economic institutions except a full utilization of existing plant and labor power. It next asserts that the reason for this condition is not to be found in any real oversupply of goods in relation to human need and desire; a study of living standards and incomes shows that among the great majority of the population wants were far from satisfied. The natural inference is therefore drawn that the reason lay in lack of purchasing power for the additional goods that might have been produced. How did this lack arise? The third proposition accounts for the lack on the following basis: (1) while the income going to wage-earners and others in the lower brackets was largely spent for consumers' goods, that going to the more prosperous was in greater degree saved; (2) not all saved income was spent for capital goods so that it could continue to circulate through industry; existing industrial capacity was sufficient or more than sufficient to supply the demand (at the prices charged) for consumers' goods, and thus the demand for new capital goods fell away; (3) the unused savings merely circulated about among speculators in Wall Street, thus producing an inflationary boom in stock prices, the collapse of which led to the great depression. The fourth proposition is that this result could have been avoided if a larger percentage of the total income had been distributed to those who would spend it for consumers' goods instead of saving it. This change in distribution may be brought about in a number of different ways, such as taxation and government spending, wage increases, or social insurance; mainly, however, Dr. Moulton contends that it may be achieved by decrease of prices as technique advances and production expands.

In thinking of this theory, it is important to avoid the common error of supposing that what is recommended is capable of being stated in absolute quantities —that is, more money to labor at the expense of less to those who share in profits, more purchase of consumers' goods at the expense of less investment in new capital.

[1] Paper presented at the annual meeting of The Society for the Advancement of Management, New York, December 4, 1936.

What Dr. Moulton advocates is rather a change in the *percentage* distribution of a growing total; if this had been achieved, profit receivers, according to him, might have had larger incomes than they actually did enjoy, and more might have been invested than actually was spent for capital equipment, because the change in distribution would have favored a more rapid and more steady growth of national income as a whole. Dr. Moulton maintains that, contrary to popular impression, increase of capital goods coincides with increase of popular purchasing power, and both decline together. It is not a question of either or, but of both or neither. He does maintain, however, that the critical causative factor is growth of popular purchasing power rather than growth of investment in capital goods, since plant capacity will not indefinitely be expanded if there is no prospect of selling additional products to ultimate consumers.

In order to state Dr. Moulton's theory briefly in his own words, we may quote from "The Formation of Capital," page 159:

> The rapid growth of savings as compared with consumption in the decade of the twenties resulted in a supply of investment money quite out of proportion to the volume of securities being floated for purposes of expanding plant and equipment, while at the same time the flow of funds through consumptive channels was inadequate to absorb—at the prices at which goods were offered for sale—the potential output of our existing productive capacity. The excess savings which entered the investment market served to inflate the prices of securities and to produce financial instability. A larger relative flow of funds through consumptive channels would have led not only to a larger utilization of existing productive capacity, but also to a more rapid growth of plant and equipment.

The above summary is an oversimplified statement of a thesis which itself oversimplifies the facts. It has been criticized in great detail both as to its apparatus of ideas and as to its substantiation by statistics. We must admit at once that the statistics are not complete and accurate enough to warrant a final conclusion, and that the statement of the theory will probably need much correction and refinement before it can stand the test of critical examination. Nevertheless, there are just as many and as valid doubts about the classical theory which this sort of hypothesis is intended to supplant.

Before going further, it may be well to mention briefly some of the criticisms which have been advanced.

First, there is a good deal of uncertainty about the measurement of excess plant capacity. Data are incomplete and uncertain. Any such measurement must, too, rest upon certain assumptions, and the assumptions chosen make a good deal of difference in the result. If no change in economic practices is postulated, what we produce at any given time is all that we can produce at that time. We know there is idle plant and labor, but in fact what would be involved in utilizing it? Dr. Moulton says that what is needed is an increase in purchasing power for consumers' goods. But suppose the idle plant and labor could be operated only at higher unit cost than that already busy (and this is usually assumed to be the case), might not the result be less purchasing power, because of the wider spread between wage payments and selling prices necessitated by the use of the less efficient factors? Another serious objection is that the distribution of idle facilities according to the kind of product which they are designed to produce does not correspond with the distribution of extra demand which a higher popular purchasing power would create. We can make more locomotives than would be needed and can produce more bituminous coal and more wheat; but there might be serious shortages of good housing, or of professional and other services.

No informed economist questions Dr. Moulton's second proposition—that people in general want a higher level of living and would buy more if they could afford it; there is no total overcapacity in relation to genuine need. Some, however, deny his third: that more money was saved during the last boom than was invested in real capital and that this excess stimulated speculation. The discussion of this subject is an exceedingly intricate one, into which we have no time at the moment to inquire. Suffice it to say that the controversy has not been settled either way to the satisfaction of all reasonable and sufficiently well informed persons. Finally, there is much disagreement about the fourth proposition—that we should be better off if a larger percentage of income were channeled to consumption. It is objected that what is obviously needed to restore employment is more activity in the construction of capital goods (since this activity has been hardest hit by the depression), that higher wages or lower prices diminish profit margins, and the stimulus of profit is necessary to induce investment in new capital equipment. More fundamental and difficult to answer is the objection that Dr. Moulton has not offered any feasible method by which the result recommended may be achieved. Even supposing that industry could be induced to reduce prices generally in a period of revival, and supposing that a substantially larger sale of goods followed, there

is a presumption that as a result of this very increase in volume of business, aggregate profits would grow rapidly in spite of lower margins of profit per unit, and the percentage distribution of the total income might not be changed at all, or might be changed in the opposite direction from that recommended. In that case, if Dr. Moulton's previous analysis were correct, the same evil results as before would follow.

Rather than add to the already voluminous and inconclusive discussion along these lines, I should like to turn to a few considerations more in the field of interest of experts in practical management. Suppose we accept Dr. Moulton's hypothesis at least as a basis for experiment, in view of the fact that its results could hardly be worse than our previous experience, and might be better. What might industry do if it should seriously attempt to enlarge total income by changing its distribution, and what might individual managers and engineers do?

First, some observations as to wage and price policy. Except in declining industries, which make products for which the demand is not capable of being enlarged, the obvious recommendation is to narrow profit margins per unit in the hope of stimulating larger sales and output. It will do no good to raise wages if selling prices are increased proportionally. It will do no good to reduce prices if the remuneration of labor per unit of product is correspondingly lessened. Such measures might temporarily benefit individual concerns or industries practising them, but if industry as a whole does not narrow the spread between unit labor costs and selling prices there can be no general percentage redistribution of income. Likewise it is necessary to avoid the practice of tying wage changes to changes in the cost of living. Unless money wages rise more and fall less than the cost of living, wage-earners will not enjoy increasing purchasing power.

Next comes the question whether it is more advantageous to raise wages or to decrease prices. No doubt both methods will be used, and each is necessary or desirable under special circumstances. As a general policy, it would seem advisable to raise money wages chiefly in the lower ranks of income—and for this purpose to support minimum wage legislation and to favor a much more wide-spread labor organization on the industrial basis rather than on that of skilled crafts, so that the unskilled and semi-skilled may have proper consideration. Otherwise it would seem desirable, when technological advances or larger sales reduce unit costs, to devote the savings principally to price reductions rather than to large wage increases in the particular industries making the advances. This is so because technical advance is extremely uneven in its incidence. Giving the total benefit of a special advance to the relatively small group of workers concerned would be impractical, and would deprive the large mass of consumers of the chance to share in industrial progress.

Another important consideration is involved in the typical cost structure of entire industries. This consideration has already arisen in the criticism of Dr. Moulton's estimate of unused capacity. It is almost always true that among a group of plants making the same or competing products, some are far more efficient than others, and unit costs vary considerably between the least and the most efficient. If, as is usually the case, both selling prices and wage rates are substantially uniform, the profit margins of the more efficient units will be excessive at times when a large proportion of the industry is kept busy supplying the market. There is only one fundamental remedy for such a situation, and that is one that ought to be acceptable to management engineers. It is either to eliminate the marginal plants or to bring up their efficiency, thus narrowing the cost distribution of the industry. Is there any course by which this endeavor might be systematically pursued? I leave the question with you, noting, however, that the first essential is honest and universal cost accounting as a basis for action. Combined with this suggestion is the warning that all industry-wide schemes to sustain prices or to allocate production irrespective of the costs of individual concerns tend in a direction precisely the opposite of that recommended by Dr. Moulton. We must either have genuine price competition or industry regulated for the purpose of increasing its productiveness and making sure that the product is distributed, through a proper balance of wages, prices and profits.

Industry, to follow Dr. Moulton's prescription, should also support governmental expenditure, especially for needed services and social insurance, derived from taxes on profits rather than from taxes on sales or small incomes. This serves to channel income to consumption. It should also support any supervision of the stock markets and of banking practices which may discourage speculation or financial racketeering as opposed to investment in real producers' goods. It should support adequate relief of the unemployed and unemployment insurance.

The measures here recommended—and the recom-

(Continued on page 14)

Measuring the Effect of Executive Acts[1]

By A. B. SEGUR
A. B. Segur and Co., Oak Park, Ill.

The effect of executive acts on production can be predicted only when the variables surrounding the work are brought under control. Two cases show the relation of such acts and results, the one for a short, the other for a longer, cycle of operation. The motion-time analysis methods for determining base time, production rates and earnings, and means for intensive operator training are briefly presented.

A PROBLEM in industrial management which has been given considerable study both by engineers and accountants is how to measure the effect of executive acts and policies upon the output of productive workers. It has been difficult to develop a satisfactory method for this purpose because of three major variables: (1) The changeability of job requirements; (2) the changeability of operating methods; (3) the variability in effectiveness of training.

Where these variables are present it is difficult, if not impossible, to tell to what degree a change in production is due to one or more of them, or to some coincident executive act. For instance, a change in specifications or equipment may produce a variation in the output from a given job. If such a change is made at the same time that an executive order affecting production is issued, how much of the change in output that follows should be credited to each? Operating methods are always difficult to limit and define. If a change in method is made simultaneously with the issuance of an executive order, for how much of the resulting change in production is each agency responsible? Properly trained industrial workers are an exception in American industry. If a working force is suddenly enlarged by the addition of new, poorly trained operators, or if an adequate training program is initiated for an existing working force, at the time an executive order is put into effect which seeks to increase productivity, in what proportion shall the resulting change in production be divided among the several influencing agencies?

It is the purpose of this paper to present for two cases the relations that existed between executive acts and production, to draw certain conclusions therefrom, and to give, in brief, the methods, based on motion-time analysis, employed to bring under control the variables in the job and in the operators' training.

[1] Paper read at the Annual Conference of The Society for the Advancement of Management, Friday, December 4, 1936, by Edward Necker.

Case 1. Production in Packing Candy

In this instance study of the job was begun in October 1928. The operators were girls, the number in the group ranged from four to six. Curve I shows the production of these girls for a period of six and one-

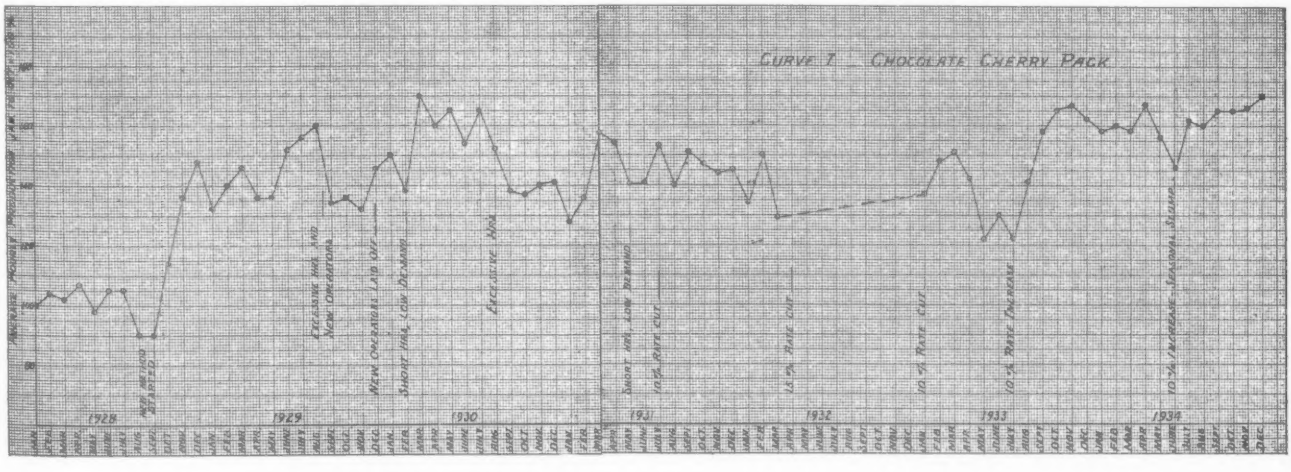


TABLE I

INTERPRETATION OF CHOCOLATE CHERRY PACKING CURVE (1)

Date and Influencing Factor	*Initial Effect on*		*Final Effect on*	
	Production	*Time*	*Production*	*Time*
October, 1928 Start of New Methods	Increase from 90 to 150	2 Months	Increase to 160	.....
September, 1929 Excessive Hours. Starting New Operators	Decrease 160 to 133	Immediate	.....	.....
December, 1929 New Operators Laid Off	Increase from 130 to 150	1 Month	.....	.....
January, 1930 Short Hours. Low Demand	Decrease from 150 to 138	Immediate	Increase to 170	1 Month
July, 1930 Excessive Hours	Decrease from 165 to 138	1 Month	.....	.....
May, 1931 Short Hours. Low Demand	Decrease from 158 to 141	1 Month	.....	.....
July, 1931 10% Rate Cut	Increase from 141 to 153	Immediate	Decrease to 140	1 Month
January, 1933 10% Rate Cut. 10% Improved Method	Increase from 137 to 151	1 Month	.....	.....
March, 1933 Demand Decrease: Bank Moratorium	Decrease from 151 to 122	1 Month	.....	.....
July, 1933 10% Wage Increase and Demand Increase and Code Hours	Decrease from 130 to 123	Immediate	Increase to 167	4 Months
June, 1934 10% Rate Increase	Decrease from 156 to 146	Immediate	Increase to 162	1 Month
July, 1934 Seasonal Slump	Decrease from 162 to 160	Immediate	Increase to 165	1 Month

half years expressed as a percentage of the standard set. Many fluctuations in productivity occurred during this period due to executive acts and decisions, some of which were initiated by the management, others due to external economic conditions, or other influencing agencies. The results of the study brought the variables of working conditions under control. Table I lists the more important of the influencing factors and evaluates both the initial and final effects. The base, or standard, set is maintained throughout the chart, although an improvement in packing was introduced in January 1933, which made possible a 10 per cent increase in output per operator.

In this case, the first effect of the new methods is a sharp increase in productivity. After this level is attained the trend is a straight line extending over a period of four years. The repetitive operations are in a short cycle which averages about .02 minute.

Case 2. Earnings from Finishing Coils

The effect of executive acts upon the earnings of girls finishing coils in a department of the General Cable Corporation is shown on Curve IIB for the entire department, and on Curve IIA for a group of four expert girls. Table II lists the factors that caused the fluctuations shown on Curve IIA and indicates both the initial and final effects.

Curve IIB shows the average earnings of all operators regardless of their length of training. Curve IIA is practically a production record of four girls who remained in the department for the entire period 1927 to 1935. It shows what the earnings per hour of the operators would have been had the piece price been held constant at the set rate of 1.2 cents per standard minute, during the period from the initiation of training through 1934. The dotted portion of this curve at

the left (period preceding installation of motion-time analysis) shows what the earnings of the operators would have been if paid on the basis of motion-time analysis rates. This curve (B and dotted continuation) is the basis for Table II.

The time per piece varied from 0.2 to 1.2 minutes, with an approximate average of 0.5 minutes. The method of wage payment that prevailed during the eight years covered by the record of Curve IIA was straight piece work, or some slight modification thereof, with a low base rate guarantee, but none of the four operators ever worked at that rate. During the early stages of training in the new methods previous average earnings were guaranteed. However, earnings practically always exceeded these amounts.

A characteristic of coil finishing is that the cycles are non-repetitive and the work is practically on a jobbing basis for coils are finished to customers' orders. During the eight-year period covered by Curve IIA and Table II it is likely that some 5,000 to 6,000 specifications for coils, and corresponding rates for finishing, passed through the department. In spite of this variety the method of setting rates produced a quite uniform final result, and practically eliminated the differences between jobs. The harder jobs were given higher rates, the easier lower ones.

Curve IIA shows that there was a considerable fluctuation of earnings and rates, from January to August 1927, with an average of about 36½ cents per hour. The management had a policy of scrutinizing critically all earnings of female labor over 40 cents per hour. Training began in August 1927 accompanied with a reduction in piece rates from 20 to 60 per cent with an average of 35 per cent. At the same time a base piece rate of 1.2 cents per minute, 72 cents per hour, was adopted. Under motion-time analysis the standard time is the time required by an expert to turn out one unit of production. It does not allow for mistakes, for delays, nor for fatigue. To obtain the average time for a worker normally expert from 25 to 35 per cent must be added to this time. Therefore, a stated price of 72 cents per hour means an actual piece rate of about 54 cents per hour. If an operator finds a better method whereby he can increase his output no reduction is made in the rate.

Following through the record of Curve IIA, immediately after the change in rates and the initiation of training, earnings began to rise at the rate of 6 cents per month until June 1930. In this rise, however, there are two fluctuations. One began in July 1928, the other in November 1929. The influencing factors are significant.

For many years the business of the General Cable Corporation had been seasonal. The peaks in each year's demand occurred between July and December, the valleys between January and July. Toward the end of 1927 business did not drop off as usual. It was believed that the expected decrease had been merely delayed. In June 1928 large orders began to come in. Reserve stock was shipped and production was increased. In October 1929 the stock market crash ushered in the depression. The copper industry was one of the first to feel the change in conditions. The Company's business began to decline which continued until February 1930, with numerous layoffs of employes. However, production habits were so firmly fixed that productivity continued to rise until June 1930.

A comparison of the curves IIA and IIB shows that while the earnings of the individual operators parallel roughly the average earnings of the group, the individual earnings rate is much higher than the group rate.

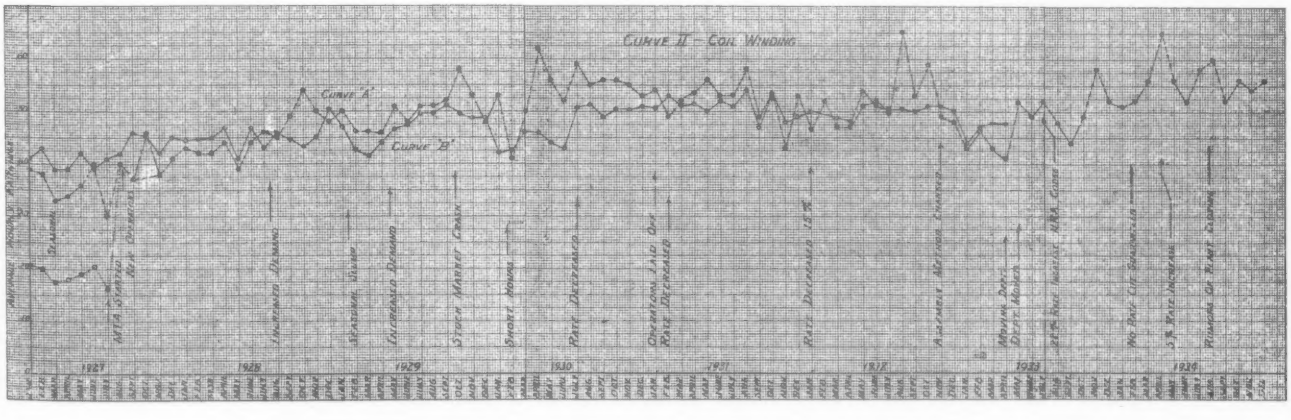


TABLE II

INTERPRETATION OF COIL WINDING CURVE (IIA)

Date and Influencing Factor	*Initial Effect on*		*Final Effect on*	
	Production	*Time*	*Production*	*Time*
February and March, 1927 Seasonal Slump	Decrease .20 to .175	1 Month	.....	.....
August, 1927 Training Started	Increase .16 to .54	14 Months	Increase to 62	32 Months
September, 1927 New Operators Training	Decrease .40 to .36	Immediate	Increase Resumed	3 Months
August, 1928 Increased Demand	Increase .44 to .54	1 Month	Decrease .54 to .49	3 Months
February, 1929 Seasonal Slump	Decrease .50 to .47	No Elapsed Time	.....	.....
May to November, 1929 Increased Demand	Decrease .51 to .48	Immediate	Increase .48 to .58	4 Months
October, 1929 Decreased Demand Stock Market Crash	Decrease .58 to .48	1 Month	Decrease .53 to .41	3 Months
March, 1930 Short Hours	Increase .41 to .62	1 Month	.....	.....
July, 1930 Rate Decrease	Increase .52 to .59	Immediate	Decrease .59 to .55	1 Month
February 15, 1931 Operators Laid Off and Rate Decrease	Decrease .54 to .49	Immediate	Increase to .54	3 Months
February, 1932 15% Rate Decrease	Increase .45 to .52	Immediate	Decrease .52 to .44	1 Month
November, 1932 Assembly Method Changed	Decrease .59 to .49	No Elapsed Time	Decrease to .44	2 Months
April, 1933 Moving Dept.	Decrease to .38	No Elapsed Time	.....	.....
May, 1933 Department Moved	Resumed at .52	No Elapsed Time	.....	.....
August, 1933 22% Rate Increase. N.R.A. Codes	Decrease .52 to .44	1 Month	Increase .44 to .58	3 Months
March 15, 1934 Announcement No Rate Cut Due to Excessive Earnings	Increase .52 to .65	1 Month	.....	.....
March, 1934 5% Rate Increase	Decrease .65 to .52	1 Month	Increase .52 to .60	3 Months
August, 1934 Rumors That Plant Would Close	Decrease .60 to .52	1 Month	Resumed at .55	2 Months

This difference may be due to four advantageous situations which concerned the individual operators: More intensive training of a picked individual; work at old piece rates when partially skilled; invention of better methods; effort to earn up to the theoretical rate of 72 cents per hour.

Again, turning to Curve IIA, a cut in base rate was made on July 15, 1930. There were two succeeding cuts in the base rate, the last one on February 11, 1932. The initial effects of the first and last cuts were to increase productivity. This effect was masked on the second rate cut by a counter factor, the laying off of a

TABLE III

COMPARISON OF LONG-CYCLE AND SHORT-CYCLE OPERATIONS

Management Change	*Initial Effect*		*Final Effect*		*Explanation*
	Time	*% Change*	*Time*	*% Change*	
Training Begun					
Candy Packing (short-cycle)	2 Months	+66%	9 Months	+78%	The changes shown are in production. Time required for training to be fully effective is longer in the long-cycle operation.
Coil Winding (long-cycle)	14 Months	+243%	32 Months	+297%	
Wage Decrease					
Candy Packing (short-cycle)	Immediate	+9%	1 Month	−1%	Initial effect of wage decrease is to increase production; final effect is to decrease production. In wage changes the length of the cycle seems to have little effect upon the lag between the time of the change and the corresponding change in production.
Coil Winding (long-cycle)	Immediate	+13%	2 Months	+2%	
Wage Increase					
Candy Packing (short-cycle)	Immediate	−6%	2 Months	+16%	Initial effect of wage increase is to lower production; final effect is to increase production.
Coil Winding (long-cycle)	1 Month	−18%	3 Months	+2%	
Demand Change					
High Demand and Excessive Hours					
Candy Packing (short-cycle)	Immediate	−17%	.....	.....	Excessive hours occasioned by high demand result in lowered hourly short-cycle production and increased long-cycle production.
Coil Winding (long-cycle)	1 Month	+9%	4 Months	+13%	
Low Demand and Short Hours					
Candy Packing (short-cycle)	Immediate	−7%	1 Month	+7%	Short hours occasioned by low demand may result eventually in increased production, but the initial effect is to lower production in order that more operators will be kept on the job.
Coil Winding (long-cycle)	1 Month	−10%	.....	.....	

number of operators. In the first and last instances the operators tried to maintain their earnings. When the hopelessness of the situation became apparent production dropped to almost its former level. In spite of all the discouragements which came along up to February 1, 1934 the average corrected earnings seldom dropped below 45 cents per hour, whereas before training was initiated the average earnings never reached 40 cents per hour.

About April 1932, the operators seemed to have assumed that conditions would be no worse, and put new effort into their work. A general rise in productivity took place until the end of August 1932. At that date the management introduced a new plan of assembly. Regardless of the merits of the method, the discouragement that came from its introduction is seen in the earning curve up to April 1933. In that month the plant at Fort Wayne, Indiana, was closed, the coil department was removed to Rome, New York, and the four operators whose record is shown in Fig. 3 moved also.

At Rome there was an immediate increase in productivity over the Fort Wayne record. The start was close to the set standard of 54 cents per hour. Soon, however, the strange conditions began to have an influence and productivity dropped until September 1933. In August of that year the Code of Fair Practice for the industry was put into effect, and the rate was increased from 0.76 to 0.93 cents per minute. This increase initially resulted in further decline in productivity. From October 1933 through to December 1934 a feeling that the worst of the depression might be over, influenced a rise in earnings to an average of about 57 cents per hour.

The evidence in Curves IIA and IIB supports these conclusions:

1. The fluctuations in earnings of an entire department are less than those of a single expert operator or a small group of expert operators.

2. The average earnings of an entire department approaches, but does not equal, those of a small group of expert operators.

Effect of Long- and Short-Cycle Operations

From these two cases, the one dealing with short-cycle operations—candy packing—the other with long-cycle operations—coil winding—the conclusion is drawn that changes in working conditions induce effects upon production more quickly in short-cycle than in long-cycle operations. Table III gives the comparisons.

Determining Upon the Executive Act

The methods by which the rates were set and the training done are now given in brief, to permit an evaluation of the results and an estimate of their creditability.

F. B. Gilbreth, the "Father of Motion Study," classified the fundamental motions in doing work as:[2, 3]

1. Search
2. Find
3. Select
4. Grasp
5. Position
6. Assemble
7. Use
8. Disassemble
9. Inspect
10. Transport loaded
11. Preposition
12. Release Load
13. Transport empty
14. Wait (unavoidable delay)
15. Wait (avoidable delay)
16. Rest
17. Plan

The means used by Gilbreth to apply this classification are on record.[4] This classification, however, gives no immediate clue as to the proper time allowance for a job. Such times can best be determined from other information. What seems to be the most generally accepted values for the fundamental reaction times in the human body are:

Speed of nerve reaction over the nerve fibres, 394 ft. sec.[5, 6]

Average number of nerve reactions over a single nerve path, 83 per sec.[7]

[2] "Cost and Production Handbook," L. P. Alford, The Ronald Press Company, New York, 1934, pages 522-523.
[3] "Laws of Management," L. P. Alford, The Ronald Press Company, New York, 1926, page 175.
[4] "Applied Motion Study," Frank B. Gilbreth, Sturgis & Walton Company, New York, 1917.
[5] "Human Body," H. N. Martin, Henry Holt & Company, New York, 1934, page 165.
[6] "Exercise and Its Physiology," A. G. Gould and J. A. Dye, A. S. Barnes & Company, New York, 1932, page 65.
[7] "Human Body," H. N. Martin, Henry Holt & Company, New York, 1934, page 169.

Since the time required to perform any human motion depends upon the operation of the human body as a chemical engine it will be seen that if the motion performed is known, the time to perform it can be calculated. Furthermore, it will be seen that these times can be interpreted into the terms of the Gilbreth, or any other, classification. We have made a slight change in therblig classification and now use the following definitions.[8]

Motion or Therblig	*Definition*
Transport loaded	Movement of transportation means against resistance or load.
Transport empty	Movement of transportation means without load or resistance.
Change Direction	Movement of transportation means out of natural path.
Grasp	To bring any thing under control.
Hold	To maintain control of anything.
Release load	To relinquish control of anything.
Unavoidable delay	Delay in the operation outside the control of the operator.
Avoidable delay	Delay in the operation within the control of the operator.
Balance delay	Delay caused by nervous limitations of the human body.
Rest	Rest or delay for overcoming fatigue.
Preposition	Act of arranging the transportation means or the part transported for the next operation to be performed.
Position	Act of bringing anything into some exact relation with something else.
Select	Act of making a choice between two or more pieces at a known location.
Search	Act of determining the location of any piece.
Plan	Act of determining a method for accomplishing a given assignment.
Use	Act of performing a mechanical, physical, or chemical operation.
Assemble	A combination of two or more motions into a standard cycle.

In practice the times for an operation made up of fundamental motions can be computed rapidly. From a list of the motions actually used on a job, arranged

[8] "Cost and Production Handbook," L. P. Alford, The Ronald Press Company, New York, 1934, page 580.

TABLE IV

COMPARISON OF CALCULATED AND REALIZED RESULTS

Product	Operation	Old Method		New Method			Company
					Actual Performance		
		Pieces per Hour	Calculated Time in Minutes	Predicted Pieces per Hour	Time per piece in minutes	Pieces per hour	
Gloves	Silking	105	0.44	136	0.42	144	Hansen Glove Co.
Hosiery ...	Labeling and Stamping.....	80 doz.	0.545	110 doz.	0.54	111 doz.	Holeproof Hosiery Co.
	Looping	84	0.591	103	0.595	101	
Tires	Form Drum Built Tires....	92	0.53	114	0.54	111	B. F. Goodrich Co.
	Wrapping Tires	95	0.53	113	0.53	113	

according to the standard classification, it is possible to determine what improvements are likely to prove profitable. When betterments are invented, or when a method is developed for a new job, a description of the method is written in such detail that an operator can perform the operation from these standard instructions. The corresponding rate is set from the synthetically determined times.

No instruments are needed. A stopwatch is used occasionally for a check, but not for setting the standards.

Table IV gives a comparison between calculated, or synthetic, times and estimated production, and the actual performance after training had been completed. The data are drawn from three plants. The differences between the predicted and realized outputs are less than the error inherent in stopwatch readings. That is, predictions based on motion-time analysis are more accurate than corresponding estimates of production based on observed speeds.

Determining Operating Methods

The method employed is vitally important in the determination of the speed on a job. Unguided judgment is of little value in determining the differences between methods. Methods selected by individual operators are invariably slower than those determined upon by analysis.

In fixing upon operating methods to be standardized and taught use can be made of the existing skill in an operating organization by recording the method of a fast operator, improving upon it, and teaching it to the others. Sometimes an operator will make an ingenious change in method which will materially shorten the time. In such cases he should be allowed the additional earnings thus made possible. In one instance a bonus of $200 was paid for such an improvement when it was taught to other operators.

To emphasize the importance of method, on the one hand, and the difficulty of noting differences in method, on the other, Figures 1, 2, 3 and 4 are presented. Figure 1 contrasts two methods of wrapping magnet coils. The difference in method appears to be slight, but the ratio of production is 19:42. Figure 2 shows two methods of boarding a sock. The output from the one is 100 dozen pairs per day, from the other 160 dozen pairs per day. Figure 3 contrasts two methods of hemming. The method at the left permits 50 inches of hemming per minute, the one at the right 200 inches per minute. Note that the important features of the correct method are in several planes. Figure 4 shows two methods of seaming, with productions of 50 inches per minute and 200 to 400 inches per minute, respectively.

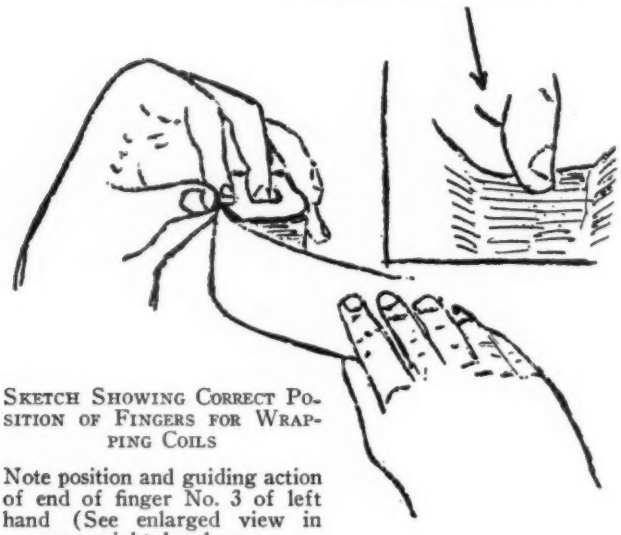
From the preceding presentation concerning the method of determining upon executive acts to increase production, three essentials are manifest:

The best method of doing the work must be found by analysis.

The best method of doing the work must be standardized.

FIG. 1

SKETCH SHOWING ENLARGED VIEW OF FINGER NO. 3 OF LEFT HAND



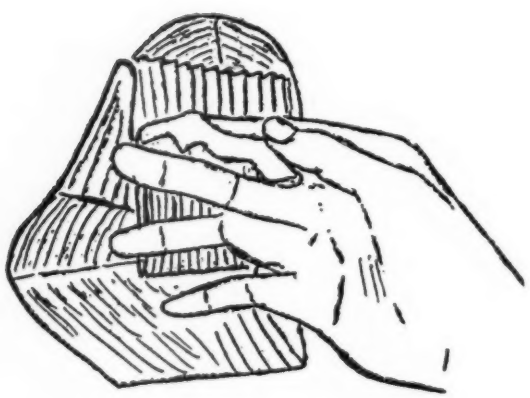
SKETCH SHOWING CORRECT POSITION OF FINGERS FOR WRAPPING COILS

Note position and guiding action of end of finger No. 3 of left hand (See enlarged view in upper right hand corner.

SKETCH SHOWING INCORRECT POSITION OF FINGERS FOR COIL

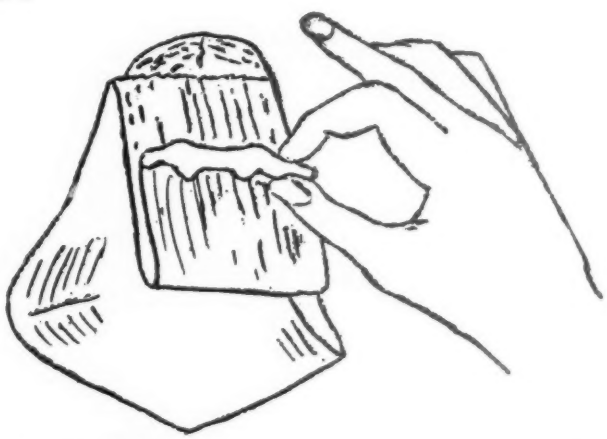
A slight difference in the method of holding makes a difference of 220 per cent in the speed of wrapping coils. When the coil was held as shown on the left, Operators had no trouble in wrapping 4200 coils per day and they did a good job. Just the slight difference shown on the right cuts the speed to 1900 per day.

FIG. 2



SKETCH SHOWING CORRECT POSITION OF FINGERS FOR GRASPING SOCK FOR BOARDING OPERATION

Note thumb above top of sock ready to open and grasp edge.

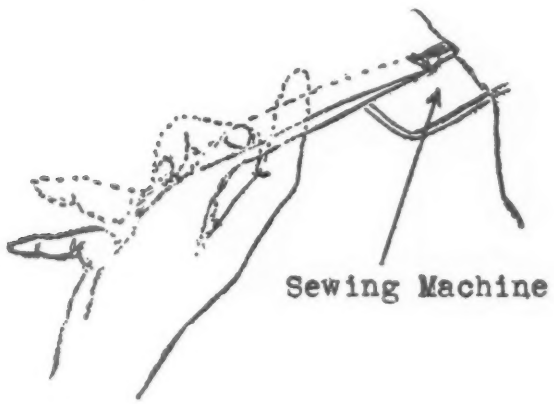


SKETCH SHOWING INCORRECT POSITION OF FINGERS FOR GRASPING SOCK FOR BOARDING OPERATION

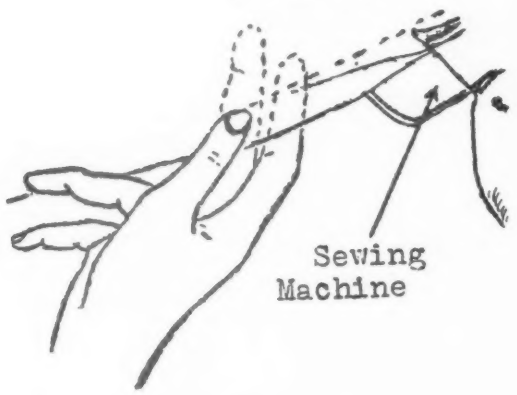
Operators picking up the sock as shown on the left were able to board 160 dozen pairs of fancy socks per day. When the method shown on the right was used the best output per operator was 100 pairs per day.

FIG. 3

SKETCH SHOWING CORRECT POSITION OF FINGERS FOR HEMMING



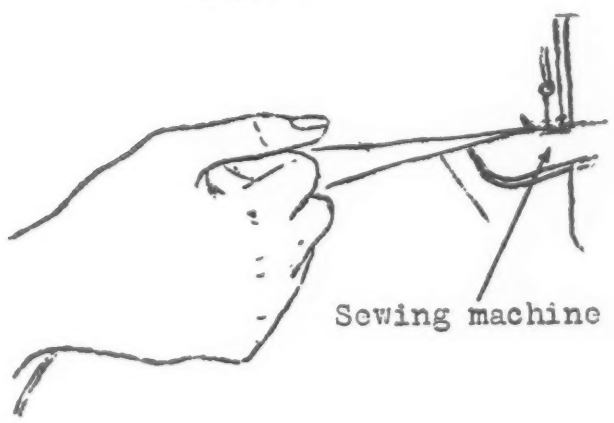
SKETCH SHOWING INCORRECT POSITION OF FINGERS FOR HEMMING



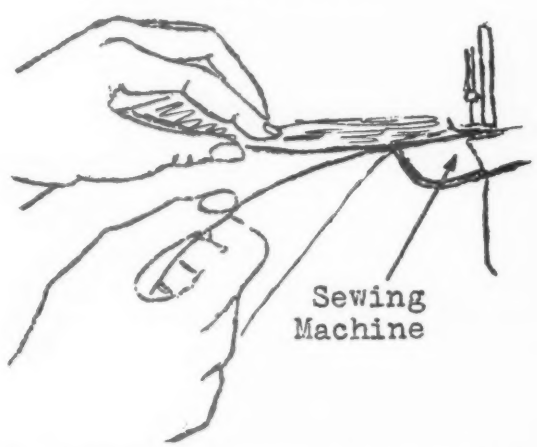
Note the small apparent difference between these two methods of holding a piece of cloth for hemming on a Sewing Machine. Placing the third finger beneath the cloth as shown on the left, permits the use of a method which enables the operator to hem easily 200 inches per minute. Placing the third finger on top of the cloth, as shown on the right, forces the use of a method which enables the operator to hem only 50 inches per minute.

FIG. 4

SKETCH SHOWING CORRECT POSITION OF FINGERS FOR SEAMING



SKETCH SHOWING USUAL METHOD OF ARRANGING CLOTH FOR SEAMING



Apparently considerable difference exists between these two methods of holding cloth for seaming. The only real difference is that the cloth in the illustration at the left is held between the tip of the thumb and the joint of the first finger which permits the use of a method enabling the operator to seam from 200 inches to 400 inches. Holding the cloth between the tip of the thumb and the tip of the first finger, as shown on the right, forces the operator to use both hands to seam 50 inches per minute.

The best method of doing the work must be taught to the operators.

The disclosures in Figures 1, 2, 3 and 4, and in Tables I, II, III, and IV show that the best available method for doing a job can be found by synthesis, and standardized for executive action to put it into effect. Accompanying such action can be others, such as a determination of a fair work assignment, and rate of compensation.

It now remains to show that the variable of ineffective training can also be brought under control. At the outset there are four assumptions in regard to industrial training that seem reasonable:

1. Proper operator training is essential.
2. The one who trains must know how to do the job.
3. The one who trains must know how to teach.
4. The one who trains must have the time and incentive to teach.

In contrast with the above assumptions there are three commonly believed fallacies in regard to industrial training:

1. A good operator can train other operators.
2. A foreman or supervisor can do the training.
3. A piece-work incentive will urge an operator to learn the proper way of doing the job.

The possibilities of increased production from proper training are high, being at a minimum estimate some 35 to 40 per cent. If an operator is physically capable, if he is provided with proper working conditions, if he thoroughly understands the job, and if he follows the correct method until a habit is formed, the probabilities are 9:1 that he will attain the standard speed without haste or speeding up, and will seldom drop below the maximum speed once it is attained. Different operators, however, may require different lengths of time to reach the maximum speed.

Production curves of operators in training on a short cycle (0.15 Minutes) indicate that 100 per cent of the set production is reached fairly quickly. This top production is normally followed by a slump of about 10 per cent with production gradually increasing after that and finally sustained at about 100 per cent. The characteristics of such learning curves have been pointed out by engineers in previous professional papers, notably by Bigelow and Piacitelli.

If production curves of all operators in a group under training are compared, the average production of the group will be found to lag about 20 per cent behind that of the best operator. The final average performance approaches that of the best operator and maintains a more even record with variations from day to day being very slight.

Longer cycles are found to require more than a proportionally longer training time but the same general characteristics are evident in the production curves.

These disclosures and the records of Table IV are evidence that the variable of operator training can be brought under control and become subject to executive determination.

Measurement of the effect of executive acts can only come when the surrounding variables are brought under control. Once this is done, by the methods outlined in this paper or others equally effective, it becomes possible to evaluate definitely the effect of other factors which cause production variations.

(Continued from page 4)

mendations are by no means exhaustive—would be difficult to execute. It is a real question whether those who set the major trends of business and financial policy will want to adopt them, or even can adopt them to any great extent in the hazards of an unplanned and cut-throat economic system. It certainly would do no harm to try, however. With the utmost possible success, the worst that could happen would be a labor shortage (that is, the substantial elimination of unemployment) combined with a shortage of funds seeking investment—a demand in every quarter pressing hard on supply. Not until we reached such a point would there be any danger from too great change in channeling income to consumption rather than to investment. Personally I doubt whether, under the existing economic order, this point can possibly be reached. But if, by some happy chance, we should approach too near it, a correction could readily be applied. It would consist merely in reverting to the old habit of serving profits first.

Executive Compensation: A Problem in Incentives[1]

By HARRY ARTHUR HOPF

Managing Partner, Hopf, Kent, Willard and Co., Management Engineers and Accountants, New York and Boston

Executive compensation goes to the root of business accomplishment. In this article are set forth the principles underlying the compensation of executives in proportion to their contributions to the success of a business and the obstacles to be overcome in installing plans of compensation for executives.

I. Introduction

AMONG the more perplexing problems facing those in responsible control of the affairs of business institutions which are large enough to have in effect a definite line of demarcation between ownership and management, is that dealing with the determination and maintenance of adequate levels of compensation of executives.

During the post-war period of expansion, there was, generally speaking, a disposition on the part of large corporations to treat their executives with a degree of liberality commensurate with increasing profits. In many instances extremely large salaries and bonuses were paid, and distributions of great numbers of shares of stock on favorable terms, or indeed as outright gifts, were made. Various other forms of profit sharing were also accepted as appropriate types of remuneration.

Unfortunately, such practices often reflected not an accurate and fair appraisal of the contributions of the beneficiaries to the financial progress of the organizations concerned, but rather, as may definitely be asserted in retrospect, the influence of a number of points of view, ranging from benign to vicious, which were dominated by superficial thinking, disregard of the interests of ownership, sublime confidence in the future, fear of the lure of competitors, ignorance of principles of measurement, favoritism, nepotism, and similar factors.

It is probably a moderate statement to say that at no other period in the history of modern times have the business executives of any country of the world received compensation for their services in amounts even remotely approaching the levels of executive compensation in effect in America during the seven years from 1922 to 1929. The economic disaster which overtook us toward the close of the latter year did not immediately put a halt to existing practices but, with the well-nigh complete collapse of business that shortly took place, it became self-evident that speedy adjustment to stern realities dictated abandonment of the high levels of compensation in vogue, elimination of practically all forms of extra compensation, and a return to saner points of view with respect to the whole problem.

American business corporations, especially those which entered the depression with relatively large financial resources, did not act at once upon the implications of the situation, and the public, faced with the spectre of want and aroused as never before in our history by emotional reaction to existing inequalities in the distribution of wealth, soon seized upon high salaries of corporation executives as an appropriate subject for attack. Newspapers and periodicals, especially those of the more sensational kind, featured in increasing number articles dealing with various aspects of the question; wide publicity was given to the salaries of many well known business executives, and savage criticisms were launched against some of these whose annual remuneration, in the eyes of many, represented almost fantastically large sums.

With the passage by Congress of the Securities Exchange Act, another factor entered into the situation, for one of the provisions of that act requires that complete information be furnished to the S. E. C. concerning salaries and other emoluments paid by corporations to their executives. Such information has been made available only reluctantly by many corporations, and they have sought by every means at their command to have it held confidential by the Commission. The latter, however, has uniformly taken the stand that the public was entitled to knowledge of salaries paid by corporations whose shares of stock were traded in on the exchanges. Thus, it is now common practice to publish salaries of executives, and the newspapers print the

[1] Paper presented at the Joint Conference of The Society for the Advancement of Management, Personnel Research Federation, Management Section of the American Society of Mechanical Engineers, and Psychological Corporation, New York, December 2, 1936.

details in full as a regular feature of the financial page.

To the persons most intimately concerned, the executives themselves, publication of their salaries constitutes a source of much embarrassment; moreover, it leads to unfortunate comparisons and frequently engenders marked dissatisfaction with existing levels of compensation.

As conditions are today, the question of executive compensation is gradually becoming more acute. With the return of more profitable business activity, executives are beginning to wonder whether they are being paid salaries commensurate with their value to the organizations employing them, and they are seeking for some measuring stick which may be applied in place of the former haphazard, not to say reckless, methods of determination of their compensation. On the part of boards of directors and similar governing bodies, there is being expressed a growing appreciation of the importance of dealing constructively with the problem within conservative limits, determined by proper composition of all the interests concerned.

While the task of dealing with executive compensation in the individual business will naturally hinge to a certain extent upon the imponderables involved, experience indicates that in a high percentage of cases the problem is one which can be reduced to simple, objective terms and solved by the application of tested principles and techniques. It is the purpose of this paper to present and discuss these principles and techniques, to describe their application in certain selected cases, and to establish their value in making compensation an incentive to executive accomplishment.

II. Statement of Principles

That executive compensation goes to the root of business accomplishment is a conclusion which, during more than a quarter century of study of the subject, has to me been inescapable. For this reason my concern, while seeking solutions of individual problems, has always been to distil from them the underlying or universal aspects which could be formulated into a body of principles that would be widely applicable and do substantial justice to all the interests represented. The six principles which are here set forth have been tested in practice and are submitted as a comprehensive series of guides for any business which is sincerely desirous of introducing a constructive plan of executive compensation.

Principle One: *The amount of the fund to be utilized for payment of executive compensation during any current accounting period should stand in a constant or decreasing relation to some basic factor of the business, such as net amount of sales.*

This principle makes establishment of the total amount of executive compensation automatic, and permits concentration upon the crux of the problem, namely, determination of the just share of each individual in the fund. The fund to be used for executive compensation should be budgeted in the same manner as are all other major items of expense.

Principle Two: *Executive compensation should be composed of two elements: (a) the base salary, which distinguishes roughly among the varying degrees of training, skill, judgment, experience and other qualifications required for performance of the work, and (b) extra compensation, which becomes payable when super-standard operating results have been achieved.*

No plan of executive compensation can constitute a real incentive which depends upon periodic salary revision in more or less haphazard fashion. Provision of a reasonable base salary, supplemented by the payment of contingent extra compensation adjusted to results accomplished, is a far sounder method. Base compensation should be paid for the achievement of predetermined, standard results; extra compensation should be paid only for super-standard results, and should be proportionate thereto.

Principle Three: *Any extra compensation plan for executives should differentiate clearly the various levels of difficulty and responsibility at which executive tasks are exercised.*

This principle applies equally to the determination of both elements of compensation, base salary and extra compensation. Grouping of executives into levels or zones according to the difficulty and responsibility of their positions, accompanied by uniformity of treatment on the same level and equitable differentiation among the levels, is dictated by the necessities of simple justice. Any difficulty experienced in carrying out such a grading process can be resolved by the use of appropriate measures of the value of the various functions and activities of the business.

Principle Four: *Determination of the compensation of executives should always be governed by their individual performance with respect to conditions substantially under their control.*

Failure to observe this important principle has wrecked many an executive compensation plan. The

true measure of the return to an executive lies in ascertainment of his accomplishment within the field of responsibility assigned to him and with regard to factors which he is in a position to control. Per contra, nothing discourages the ambition to produce outstanding results more certainly than the realization that factors over which the individual has little or no control will be weighed heavily in measuring or appraising his performance.

Principle Five: *The success of any executive compensation plan is conditioned upon the existence of a definite understanding, amounting to a pledge, that if super-standard results within the range of accomplishment are achieved, stipulated extra compensation, expressed in definite terms, will be paid.*

To provide an adequate incentive to all concerned, it is essential to arrive at a definite understanding before the fact. Moreover, it is necessary that from time to time figures be published concerning operating results currently achieved, so that executives may proceed with assurance toward realization of the goals set. Any attempt to keep the question of executive compensation in the realm of vague promises or illusory hopes for the future cannot but have a disastrous effect upon morale.

Principle Six: *Standards of accomplishment should be adjusted from time to time in line with changing conditions and improvements in organization, procedure and equipment.*

Executive compensation plans must be flexible; they should never be rigid. One test of the soundness of a plan is its adaptability to changing conditions. Observance of this principle is essential so that the tasks of executives may avoid the extremes of excessive difficulty and comparative ease of accomplishment. What should be striven for may best be expressed in the injunction: Set a stiff task for a good man, and reward him well for its accomplishment. Moreover, ownership is entitled in the long run to at least a part of the result of the increment of skill and experience which normally occurs under conditions of progressive development.

In setting forth the foregoing principles, only fundamental considerations have been advanced. Many corollaries to the principles could be cited, but I believe that their implications are apparent. Moreover, they will be brought out as we proceed to consider the application of the principles in the formulation of executive compensation plans in specific cases.

III. Measurement of Accomplishment

Study of the principles enunciated will at once reveal that their application is predicated upon the measurement of executive accomplishment. That is a subject to which little attention has as yet been devoted, and one which challenges the best managerial talent. It is intimately bound up with many basic functions and activities of management, such as the perfecting of organization, the motivation of personnel and the application of budgetary control. Its chief purpose may be said to be the stimulation of executive effort, not only directly, as a result of measurement and its sequel, the setting of standards, but through the provision of a sound and equitable basis on which to devise a plan of incentive compensation.

Executive accomplishment *can* be measured. It is just as subject to the application of the techniques of measurement as is the accomplishment of employes of the rank and file. To be sure, such measurement implies a certain stability (not to say standardization) of the conditions surrounding executive performance, but we must here assume that we are dealing with situations which either have already reached a high level of managerial effectiveness, or else can be concurrently brought to such a level. After all, the introduction of a plan of incentive compensation for executives is one of the finer developments of the art of management; it cannot be expected to flourish if superimposed upon a chaotic structure.

Measurement requires the determination of criteria and units of accomplishment. For any given executive position or group of positions, such criteria and units are readily established through analysis of the tasks and their bearing on the objectives of the business. For example, the principal criterion of accomplishment of the general officers of a business would be net profit earned. Divisional executives would be judged by divisional operating results, as expressed in profits; departmental executives by net volume of activity, unit cost of operation or, if possible, effect on profit, and so on down the line.

In the determination of the criteria, care must be exercised to exclude from consideration all factors whose influence on results is definitely beyond the control of the responsible executive. If, for instance, a company policy stands in the way of an executive's freedom of action with respect to the operation of his department, due allowance should be made for that fact; if a department is burdened by non-productive

charges such as unused plant capacity or equipment, these should be eliminated from consideration in judging departmental results.

In establishing the criteria of measurement of accomplishment, some provision should be made for taking account of achievement with respect to organization factors that cannot be directly measured, such as development of subordinates, co-operation with other units of the institution, improvement of customer relations, etc. While accomplishment in these respects must still be evaluated by appraisal, it is entirely possible to arrive at an impartial rating of the effectiveness of an executive with regard to them, and to combine that rating properly with his attainment in relation to the measurable criteria. The importance of taking such factors into consideration should be stressed as a control against possible excesses which might otherwise be indulged in in an effort to make a showing—possibly only temporary—with respect to the more tangible operating results.

Once the criteria have been set up for the various positions, they are apt to remain permanently valid—at least as long as the objectives of the business do not undergo a radical change. Standards of measurement are another matter. These have to be adjusted from period to period in accordance with changing conditions and trends. Establishment of standards should always be effected in advance of the period to which they relate, and concurrence of the executives in the goals set should be secured. Standards throughout the organization should, of course, be co-ordinated and integrated with the budget.

Only performance in excess of the standards is subject to extra compensation. It is therefore a matter of fine adjustment to determine the exact point at which a standard should be fixed. It should, on the one hand, avoid being so high that its attainment is barely possible: that would unduly discourage endeavor; on the other hand, it should not be so low that only normal expenditure of effort is required to exceed it: that would vitiate the very incentive which it is designed to provide. It should be established as closely as possible to the point of performance which reasonable capacity and industry may be expected to attain, and should leave a margin for rewarding the demonstration of unusual ability or effort in surpassing the goal.

IV. Illustrations from Practice

Stepping from theory to practice, we come now to certain illustrations of the application of the principles discussed to actual conditions encountered in the arena of business. Our first example is drawn from the retail field and relates to the establishment of a plan of incentive compensation for the buyers of a large department store.

Analysis of the compensation paid to buyers under the methods in vogue when the study was undertaken showed complete absence of logical relation among base salaries, extra compensation and total salaries paid, and a similar lack of influential bearing upon the elements of compensation (base salary and extra compensation) of the vital factor of departmental net profits. To illustrate, extra compensation payments to individuals, figured as a percentage of base salary, ranged in a single normal year between 2.4 per cent and 516.6 per cent.

At the same time, such inconsistencies were observed as the payment of extra compensation amounting to 73 per cent of base salary to the buyer of a department which showed a net profit of 6 per cent, while the extra compensation of a buyer whose department made a net profit of 8.9 per cent amounted to only 5.5 per cent of base salary. The base salaries in these two cases were substantially equal. Another glaring instance of injustice was seen in the cases of two buyers of departments doing a volume of approximately $500,000 each. Buyer A was paid a base salary of $8000 and made a net profit of 18.8 per cent, while Buyer B's salary was $14,000 and his net profit 11.5 per cent. Yet Buyer A received no extra compensation at all, while Buyer B was rewarded by an extra payment of 18.5 per cent of his base salary.

Nor was there any uniformity of relationship between buyers' salaries and size of department, although by and large it was the tendency of the organization to proportion the remuneration of buyers to volume of sales. Indeed, the coefficient of correlation of these two factors amounted to $+.84$. Nevertheless, such discrepancies came to light as the payment of twice as high a salary to the buyer of a department doing 19 per cent less volume than that of his lower-salaried colleague, and the payment of only 10 per cent more salary to the buyer of a department doing over 80 per cent more business than the other department in question.

A multiplicity of inconsistencies of this sort could be cited from the record for each of the years analyzed, but you will take my word for it that the conditions were flagrantly inequitable and subversive of the morale of these key members of an important retail establishment.

To correct the conditions described, a plan of incentive compensation was devised which would conform to the following specifications:

1. One policy should apply to both base salary and extra remuneration;
2. The basis of computing compensation should be uniform, on either store-wide or divisional lines;
3. The basis should be objective; it should be rooted in accomplishment;
4. It should be as certain as the accounting figures;
5. It should be commensurate with performance;
6. It should be simple in application and calculation;
7. It should be readily understood;
8. It should appeal to fair-minded employers and employes as just and reasonable.

The development of a plan having these characteristics involved a very extensive statistical study of operating figures and relations for a ten-year period. As a result, the following elements of a store-wide plan of compensation for buyers were set:

1. A net profit base of 5 per cent;
2. A total compensation base of approximately 2 per cent of net sales;
3. An extra remuneration base of 33 per cent of total compensation.

Using these norms, mathematical techniques and formulæ were devised for determining the maximum total compensation of buyers of the various departments on the basis of their average net sales for the three preceding years. The value of size of department was given effect by the use of a table of rate constants above and below the 2 per cent norm, derived from calculation of an equation showing the normal influence of size on compensation. The variation of departmental profit above or below the 5 per cent norm was used to modify this result.

Base compensation was established at 66⅔ per cent of total compensation. Extra compensation, therefore, might amount to a maximum of 50 per cent of base compensation. The actual amount of extra compensation was determined by multiplying the net profit of the department by the excess of the profit percentage over the 5 per cent norm. Suitable adjustments were made for departments which were consistently unable, in spite of good management, to earn a profit of 5 per cent. A definite regulation was made that no extra compensation should be paid to buyers whose departments failed to show a profit.

The description of this plan has of necessity had to be condensed to its salient features. Its purpose was to supersede a condition of virtual chaos with respect to remuneration by a procedure which would appeal on the score of its fairness, adequacy, simplicity and incentive value, and at the same time keep the total salary expenditure within reasonable bounds in line with volume and profits.

The second example chosen also pertains to the retail field, and concerns the development of a compensation plan for the executives of a large mail order house. Here the problem was not homogeneous, as in the preceding case, but involved a large group of executives performing a wide variety of functions. In order to do it justice, it became necessary to distinguish among the duties and responsibilities of the positions and to grade them into levels of importance. Three well defined levels were distinguished, as follows:

1. Executives who were in a position to influence profits for the business as a whole;
2. Those in a position to influence the results of large organization units, such as functions or divisions;
3. Those whose performance could be gauged by quantitative and qualitative measurement of the output of small operating units.

At the first level were grouped three different classes of executives: (a) principal company officers; (b) certain functional executives, such as director of public relations, comptroller, assistant treasurer and assistant secretary; (c) certain staff assistants to groups (a) and (b). All of these executives were regarded as entitled to participate in a general profit-sharing plan applicable when company profits exceeded a predetermined standard. Distinction was, however, made between the principal company executives and the other executives included in this group, in that the participation of the former in profits was to take the form of stock distribution on favorable terms, while the latter would derive their return in the form of cash payments.

The second level of the classification of executives also comprise three groups, namely, the chief operating executives of each of the three principal divisions of the business. All of these executives were permitted to share, in cash, in extra compensation contingent upon the results achieved by their respective divisions in excess of budget estimates.

In the group at the third level of the classification were included all minor supervisory positions of which the duties would permit of measurement of quantity and quality of output. Extra compensation to the group was to be paid in cash for performance above predetermined standards.

It is not my purpose here to present to you in detail the various provisions governing the calculation of group and individual shares in the profits of this institution. What I wish to point out is that no matter how complicated the organization structure or how diversified the functions and activities of the executives of a business, it is possible, by classifying the positions into levels of importance, to devise appropriate methods by which those at each level may share equitably and proportionately in the results to which they have contributed. Thus participation in extra compensation can be definitely related to elements over which the respective executives are in a position to exercise control. The contingent character of the extra remuneration in each case provides the desired incentive.

The third example selected relates to the members of the executive group of an industrial organization manufacturing a wide diversity of products. For some years it had been the practice of the organization to pay cash bonuses to its executives and to distribute these in harmony with the salaries in effect. Moreover, certain major executives were periodically made the recipients of common stock of the company, such stock being distributed as a gift with the understanding that if at any time the recipients should sever their connection with the organization, the latter would have the first option to buy back the stock.

While it may be conceded that the practice just described constituted an incentive to executives to put forth their best effort, much of the value which might otherwise have attached to the plan was lost because of existing inequalities in base salaries paid, and failure to distinguish fairly among the contributions made by executives to the progress of the organization.

It was felt by the management that a material change should occur, and that payments for executive service rendered should be capitalized to a greater extent than had previously proved possible. As one of the executives, a man of considerable discernment and experience put it, a new plan should be adopted that would (1) capitalize to the fullest extent the factor of remuneration; (2) reward materially accomplishment of unusual value; (3) provide incentives to individuals to which they might be expected to respond and, finally, (4) adjust compensation in line with results produced.

After much study, a plan possessing the following characteristics was devised and introduced:

1. Base salaries were adjusted in line with the relative degrees of skill, judgment and experience required to meet the responsibilities involved.

2. A so-called "cash bonus fund" was created by setting aside an amount determined by an increasing scale of percentages of the base salary fund, adjusted in harmony with the relation of profits to sales. This fund was distributed among executives in line with their salaries.

3. A supplementary fund known as the "incentive bonus fund" was created in like manner, though with considerably smaller percentages. This bonus was distributed for outstanding work during the year to those executives who in the opinion of the board of directors were especially deserving of such reward.

The interesting feature of this plan was the fact that the two funds created were expressed in terms of percentages of base salaries. This was done in order to divert the attention of the executives from the fact that the funds were derived from profits and to keep steadily before them the contingent character of the extra compensation.

While not an illustration from practice, but rather the product of research in a special field, I desire to include here brief reference to salaries of life insurance executives, a subject concerning which I have on other occasions published data of interest.

It is generally known that life insurance companies pay their executives fixed salaries, and that the payment of extra compensation is not sanctioned by state insurance departments. In my "Study of Salaries of Life Insurance Executives," [2] I pointed out that the actuarial net premium fund was a measure that could effectively be employed in determining the size of the executive salary fund and that it constituted a valuable factor for budget making purposes.

Despite the fact that the fiduciary character of the business justifies strong conservatism in the treatment of the salary question, I have long felt that it would be directly in the interest of policyholders generally if some form of extra compensation could be introduced into executive salary practices in the life insurance field.

For example, executives of the underwriting department might well be compensated in line with mortality gains achieved; agency executives could have their remuneration proportioned to the cost of acquisition of new business and the degree of stability maintained; investment executives might be rewarded beyond their base salaries by compensation predicated upon increased yield on investments under conditions of safety as to principal.

[2] Published in *The Spectator*, Philadelphia, June 8 and June 22, 1933.

Contrary to the general supposition, salaries of life insurance executives are very moderate when taking into account all pertinent factors, and it would in my opinion tend to the achievement of improved operating results to make an adequate financial incentive available to the men who are responsible for the successful operation of these indispensable institutions.

V. Obstacles to Successful Administration

In the foregoing pages I have endeavored to outline the principles on which an effective plan of executive compensation must be based, to describe the problems involved in measurement of executive accomplishment and to present cases illustrative of the application of incentive compensation to various types of business institution. It is appropriate at this point to supplement that presentation by brief reference to some of the obstacles to successful administration which have been encountered in the past and which are likely sooner or later to manifest themselves in connection with the operation of executive compensation plans. Reference to these obstacles is made as a precautionary measure to stress the need for careful control over the basic provisions of any plan adopted, lest negative influences undermine their inherent values.

1. *Inequalities in base salaries tend to offset the benefits of even a liberal plan of extra remuneration.*

It cannot be stressed too often that, primarily, executives are interested in properly established base salaries; they feel keenly any existing inequalities and, until these are removed, they do not, as a rule, react wholeheartedly to the incentive normally furnished by extra remuneration. Therefore, it is best not to attempt to introduce any extra compensation feature until assurance is had that base salaries have been equitably established in line with the duties and responsibilities of the executive tasks and with the personal, educational, technical and experiential qualifications required in their incumbents. Similarly, any adjustments made in base salary payments during the life of an extra compensation plan should be carefully considered in the light of the extra compensation feature, and should not be permitted to distort the picture and thus to jeopardize the essential incentive values.

2. *Absence of definite standards of measurement tends to produce an increasingly high correlation between base salary and variable elements of compensation.*

Because of the difficulty of devising definite standards of measurement, those who are charged with the determination of individual awards in the form of extra compensation often consciously or unconsciously allow themselves to be influenced by existing base salaries in arriving at such awards. This trend was particularly noticeable in the apportionment to individual executives of shares in the management fund maintained by the National City Bank during the Mitchell regime. As I recall this case, several of the principal officers of that institution, whose salaries were far and away greater than those of the other participants in the management fund, consistently received the lion's share of that fund. This was not directly or demonstrably due to their superior influence on the operating accomplishment of the bank, but was merely a reflection of the relative levels of the salaries pertaining to their positions. Such a situation is bound to create dissatisfaction on the part of those who have reason to regard their own contributions to the success of the institution as at least equal in importance to those of some of their more highly salaried associates.

3. *Participation in extra compensation plans of individuals whose responsibilities and duties are without measurable effect upon profit or performance, militates against the general incentive value of such plans.*

It is just as important to determine those who should be excluded from the benefits of an extra compensation plan as it is to decide who should be among the participants. The classification of executive positions into levels of importance, as described in the second example previously cited, constitutes a means of determining which members of the organization are definitely in a position to influence accomplishment and of defining the scope and extent of such influence. The participation of each class of executive in extra compensation should be based directly on the extent to which profits or performance can be influenced, and those found to exercise no appreciable influence should be rigidly excluded from participation. Otherwise the incentive value of extra compensation is correspondingly diminished.

4. *Artificial depression of base salary levels tends to reduce greatly the incentive value of extra compensation plans.*

Only too frequently in connection with the maintenance of extra remuneration plans, a tendency develops to reduce base salary levels and, especially, to induce individuals to accept employment at less than adequate salaries on the plea that a bonus will be paid. This practice is vicious and cannot be too strongly con-

demned. Base salaries should always be determined in conformity with the varying degrees of importance of the responsibilities and duties entailed in the positions. Moreover, they should be reasonably adequate in the light of appropriate standards of living and of salaries normally paid for comparable positions in the same organization, community and industry. Contingent payment of extra compensation should not be permitted to affect adversely adequate standards of base salary payment.

5. *Uniform distribution of extra compensation in line with base salaries usually nullifies the incentive value of the former.*

This occurs because, as a rule, executives are intelligent enough to recognize the fact that individual differences in performance will persist under any plan of remuneration which can be devised; therefore, they fail to derive an incentive from the application of a uniform rate in the distribution of extra compensation. Such a situation is most unfortunate, for it fails utterly to exploit the values which would otherwise attach to the expenditure of the extra compensation fund.

6. *To defer the payment of extra compensation well beyond the period during which it was earned, often results in failure to capitalize its incentive attributes.*

It is obvious that the incentive value diminishes with the lapse of time between accomplishment and reward; hence, it is important to adjust the time element so as to secure the maximum benefit. In organizations where budgetary procedure is in effect, it is desirable to calculate extra compensation earnings for each budgetary period. In general, payments should be made more often than once a year—semi-annually or quarterly, perhaps. Whatever frequency of distribution is established, promptness in making payment following the close of the accounting period increases the satisfaction with which it is received and correspondingly enhances the incentive afforded.

VI. The Problem in the Final Analysis

In summarizing the topic assigned to me for discussion, I regard it as appropriate and worthwhile to place due emphasis upon certain general considerations which vitally affect the incentive values attaching to any well designed plan of executive compensation.

1. As organizations grow larger, the period of time required to reach the more important executive positions through promotion tends to lengthen; hence, the average age of induction to such positions is bound to be more advanced than formerly. Under such circumstances, points of view established in the lower positions, which are usually functionalized in character, assume a degree of crystallization which is apt to stand in opposition to material enlargement of existing intellectual capacities.

2. Executives who have demonstrated their ability to function effectively as second in command, do not *ipso facto* qualify for positions in which the power of decision rests chiefly, if not exclusively, in their hands. Many a good second has become a poor first, largely because of temperamental infirmities, such as inability to decide promptly, and unwillingness to exercise direction.

3. Leadership is a peculiarly personal attribute, whose scope and spontaneity are defined by the emotional, intellectual and spiritual attributes of the individual executive. It is not the exclusive possession of any particular group, although the highest executives are held to the strictest accountability for its effective demonstration. Leaders are both born and made, and it is of great consequence to the development of capacity along these lines to recognize that some types of executive work tend to obstruct, and others to promote, its fruition.

4. Finally, interpretation of the record of performance is usually based largely upon profit or loss accomplishment, and this factor, in its larger aspects at least, is so complicated by the interplay of forces of controllable and uncontrollable character, that it requires the closest kind of reasoning and knowledge of the facts to determine the degree of responsibility which should be assigned to the executive under consideration.

From some points of view, the solution of the problem of executive compensation may be regarded as of the greatest possible significance to the success of a business institution. Motivation of the personnel must begin at the top; leadership is obliged to express itself through organization channels. Therefore, unless the managerial group, the key men of the institution, are provided with adequate incentives to accomplishment, it cannot be expected that either their performance or their influence upon their subordinates will contribute in the highest degree to the progress of the enterprise.

May I express the hope that what I have here presented will prove acceptable as a contribution to the promotion of constructive thought with respect to one of the most perplexing problems facing business today.

Prosperity, Profits and Payrolls[1]

By ORDWAY TEAD

Editor of economic and business books, Harper & Brothers, and lecturer on personnel, Columbia University

As prosperity comes upon us and greater profits are made, it is necessary to the effective working of our system, that payrolls be substantially increased.

Prosperity may bring us into a boom which will repeat the 1929 collapse. Suggestions are made of a number of ways by which the severity of such a collapse can be greatly decreased.

THOSE familiar with the traditions of the two constituent societies of The Society for the Advancement of Management know that we have always tried to devote some of our attention to problems of efficient and scientific operation in the industrial world that looked out on a broader focus than merely the operation of the factory as a single unit. And certainly at a time when we are going into the upswing of another period of prosperity for us from the managerial point of view to examine the problems of efficient operation as they pertain to the economic system as a whole, is one of our mandates as thoughtful, professional, managerial people.

My title, "Prosperity, Profits and Payrolls," is more than merely alliterative. For my thesis is that prosperity, in the old, uncontrolled pattern will be a serious boomerang and will inevitably bring its own undoing. We should not want it. We should be afraid of it. And we must consider afresh how profits are to be used, how payrolls are to be used, and how the other related factors should be handled in order to introduce greater elements of assured stability and national well-being into the system.

We are on the upswing of a new cycle which will not last forever. As Walter Lippmann says, "The management of the business cycle is not an exact science but rather a new and uncertain art."

Lord Morley has said: "Great economic and social forces flow with tidal sweep over communities only half-conscious of that which is befalling them. Wise statesmen are those who foresee what time is thus bringing, and try to shape institutions and to mold men's thought and purpose in accordance with the change that is silently surrounding them."

New Forces at Work Today

What are the new forces that silently surround us?

First, we are cycle conscious. No wise business will hereafter keep out of its reckonings the problems of irregularity as they broke upon the world in the last depression.

Second, we are in a new way security conscious, conscious of the need for more universal security of livelihood.

Third, I venture the statement that we are on the defensive somewhat about our system, and we feel the need of justifying the ways of capitalism to man.

Maynard Keynes, one of the keenest of contemporary economists, offers this challenging statement which is in a sense the text of what I want to say. He said: "The very nature of capitalist society requires that it be vastly more successful than any alternative if it is to maintain its hold on the allegiance of men."

How are we going to maintain the hold of our system on the allegiance of men? I agree with Dr. Slichter, who said at Princeton a few months ago: "One of the things we have got to do is to make profits more popular." And I venture the assertion that one of the new factors in our situation is the necessity for popularizing the idea of, not say the wider use of, profits in the oncoming upswing.

By the same token another factor is that we recognize more than ever the vital meaning and application to our problems of the old phrase that prosperity has to be passed around. And to do that we have to accelerate and increase the total flow of purchasing power in this upswing period. It is upon the inter-relations of these several factors and forces that I think we should be pondering today.

Characteristics of Present System

Let me remind you first of the basic elements of the way in which we do work already. The flow of purchasing power, the flow of goods, is the concern of those who would keep the system stable and effective. We should be concerned in the first instance with the

[1] Paper presented at the annual meeting of The Society for the Advancement of Management, New York, December 4, 1936.

absolute amount of that flow, with the total volume of productivity to be considered, and to be distributed. That is the major, fundamental and underlying consideration,—the largest possible size of the total volume of goods and services made available. But we are also concerned with the proportional amounts which go to different groups in society as between industry and agriculture, for one instance; as between, for another instance, the flow that goes to immediate consumer uses as compared with that which go to capital goods uses.

We should be concerned also as to the speed of that use, with the velocity of turnover and circulation of that flow. We know, too, that we have got to provide out of the total income for obsolescence. We may surmise, I think, that we haven't been making enough provision for obsolescence in the last six years. But in addition to that, there is the absolute requirement for new capital for new and independent ventures. And there is, again, the requirement—it seems so obvious and yet we face real problems here—of how individual security, how liquidity of individual resources—is to be assured in the next upswing, and then into the next downswing.

That problem of liquidity as the individual consumer faces it is the problem of the extent to which life insurance, building and loan associations, and savings banks, and any other thrift devices which corporations themselves may use with their employes or individuals may seek for themselves, are going to operate safely. How truly liquid in that next downswing will our thrift institutions find themselves as compared with the period of 1929 to 1933? Then the search for liquidity, that panicky effort to translate funds into goods, proved all but disastrous. And we experienced such a writing down of values both of corporation and of individual savings that we know now that thrift is more easily attempted than achieved.

There is a further element we have as economists and business men to understand and that is the fundamental factor of the slowing down of the number of people to whom we are going to minister at all, the declining birth rate. And there is the fact that probably between 1945 and 1955 we will reach a point where we don't increase our population at all, if the now-going forces continue to operate as they do. That should be a factor in our managerial calculations and, by that same token, of course, we know that the kind of demand we have to minister to is in quality a somewhat different demand, due to the increasing age of our people.

One of the WPA executives told me recently about their tentative explorations into the characteristics of those people still on WPA relief. And these tentative findings are interesting because they bear out the existence of this trend.

He said: "We find that apparently at least half of our people are over forty years of age, and the problem that we have there from the re-employment view is very serious. A quarter of them are twenty-five and under and never have had any jobs at all. And some of the total should properly be classed as unemployable."

We know, too, from all our studies in the social security field incident to the creation of our national pension plans that whereas in 1890 we had only two and a half million people over sixty-five, which constituted four per cent of our population, in 1930 we had six and a half million people over sixty-five, five and one half per cent of our people; and, projecting the curve, in 1970 we are then going to have fifteen million people, or ten per cent of our population over sixty-five years of age. The impact of that in terms both of demand and of productive energy upon our system, is, I submit, one of the factors we will have to give consideration to both as managers and as citizens.

Obviously a prosperity pattern is upon us. Credit is abundant; terms are easy; prices are rising, wages are rising; net profits are rising. And the picture is all set for something like another boom. And the question is: Shall we be warned by the difficulties of our past ten years? Shall management take an affirmative stand on those elements in the picture where management can be influential in a corrective way?

Elements Controllable by Management

What are some of the elements in this picture which are somewhat controllable? The Brookings people say, as we all know, that the crucially desirable contingency would be that we reduce prices. But the reduction of prices is easier said than done. It was a wishful affirmation, I think, of Dr. Moulton's that this should take place. It was a wishful expression of Mr. Hoover's the other night at the A.S.M.E. dinner, that this should take place.

Individual concerns and corporations do not, cannot, voluntarily reduce prices. There are exceptions; but on the whole that is not the way in which American business has operated in the past. The rigidities in the system produced by the opposite trend, the trend of

inflexible or rising prices, all economists are familiar with.

Josiah Stamp, in his Presidential Address before the British Association for the Advancement of Science, gave his acknowledgment of the difficulties which this fact raises today. He said: "Today many of the factors formerly free are relatively fixed, such as wage levels, prices, market quotas, and when an external impact at some point strikes the organism, instead of the effect being absorbed throughout the system by adjustments of all the parts, it now finds the shock evaded or transmitted by many of them, leaving the effects to be felt most severely at the few remaining points of free movement or accommodation."

And he pointed out that unemployment was one of those few remaining points. In other words, I do not look, myself, to the lowering of the price element in our equation as something that is an immediately likely contingency.

The Wage Element

The wage factor would conceivably be another controllable element. It seems to me as we go into the next upswing, one of the things we have to correct our thinking about is to emphasize the need for thinking less exclusively in terms of wage rates, hourly rates, and increasingly get our managerial thinking directed in terms of annual incomes. It is only as we think in terms of annual incomes that we get the broader and economic phases of the wage problem adequately before us. For managers always have to realize that wages are two things. They are not merely costs, important as they are as costs. But wages, we must never forget, are also that means by which our system has elected to pass out to the great body of industrial workers whatever purchasing power they are going to have. And, whether managements individually are able to do it or not, somebody in the community—I insist, *somebody* in the community—has got to be mindful of the problem of total income distribution. It is not merely an issue of the costs for an individual corporation, but it is a problem of the level of incomes for manual workers as a whole.

And when we realize that around $1300 is the normal annual income level that we see today and when we know what amounts of goods can be taken off the shelves on that level of purchasing power, we know that we have a long way to go in respect to the utilization of our possible prosperity, if payrolls, profits, and prosperity are to roll up together, genuinely.

Nor can we adequately face this problem merely in terms of adjustment of present wage rates to cost of living indices. It will of course be desirable, be better than nothing, that such adjustments are made, keyed to cost of living indices. But if all managerial thinking takes current wage levels as a base, and says that the only adjustments that they can see as desirable and necessary are those three or four per cent up or three or four per cent down in relation to costs of living, we will have gotten nowhere in the discussion of distribution of the national income from the point of a new general prosperity.

We never have faced up as a nation to a further aspect of the problem, namely, that we have had a rising curve of total national production and productivity, leaving out irregularities, of between three and four per cent annually for the last thirty years. So that I submit for consideration this point, that somebody has the obligation and responsibility of thinking this problem through: How is it that the distribution of our national income is also to account for and give us all the benefits from this increasing total of productivity? I am of those economists who are not content to say that this problem automatically takes care of itself. The experience and evidence of the last twenty years are that it does not. And, somehow or other, the relation of total wages to increasing total productivity, is one of the elements in the equation that has to be provided for, has, so to say, to be planned.

The Salary Element

Another point that is exceedingly delicate but that again has honestly to be faced, is the salary problem. The whole question of the publicity of salaries has not been settled. Salary publicity is, so far as one can see, one of the things that is likely to continue under the political and economic situation of the day. And one of the new elements in the situation is that salaries, particularly high salaries and special executive bonus devices, have to be thought through afresh from the managerial point of view in respect to public relations and in respect to employe relations. We have got to justify and be prepared to justify the kinds of salaries which in some cases have been publicized in the last few years. And we will not facilitate this whole income flow if the situation is put into disequilibrium by

exorbitant salary allocations in some of these situations as we have seen them.

The Profit Element

What, now, can we do about the profit situation? We are compelled under the undistributed profits law in the immediate present to do certain things about it. That has been one element, but only one, I think, in accelerating the extraordinary interest and the extraordinary extension of practice which there is in the field, loosely spoken of as profit-sharing.

At the Industrial Relations Library at Princeton University they told me recently that they have had in recent months more inquiries from corporations as to ways and means of profit-sharing than they have had on any other single subject in the whole industrial relations field. And, as you know, beginning with the publication last spring of the Westinghouse Electric and Manufacturing Company's profit-sharing plan, there has been a continuous succession of companies, borrowing the essential idea in the plan, modifying it to their uses, and in one way or another taking up this method, either as distribution out of profits or as special wage bonuses.

How we interpret that, what the meaning of this is from the point of managerial motives, it is not always easy to say. Nor is there but a single motive in view. My own notion is, speaking as an economist, that the influence and the motives which this trend gives evidence of, are wholesome. They are wholesome because they give added recognition to the need for solving the problem of how it is that we shall get the flow of national income in larger volume distributed more widely, and get the use of it accelerating so that the velocity of purchasing power is also greater.

There will be dangers in efforts to share profits and some companies will be disappointed. But I would say that the managements of corporations which will approach this profit-sharing problem in the next few years consciously from two points of view at once, and balance the one against the other, will have a far more wholesome attitude of mind about it than if they approach it only from one point of view. It may be approached from the morale point of view, and certain benefits in improved morale undoubtedly will accrue if the plan is properly conceived and carefully executed. But in the second place it is to be approached and justified, better justified perhaps, if it is conceived in the economic terms of how to make this a further way of enlarging and accelerating the volume of purchasing power which gets into the hands of a larger and larger fraction of our population.

Profit-Sharing Trends

Just a word further as to hazards of the profit-sharing trend which I am sure is about to increase greatly in the immediate future. Managers will be well advised if they make it clear to employes that this compensation has nothing to do with wages, that it has nothing to do with individual efficiency. To tie it up in some way with individual merit may be ideally desirable; but I know of no company which has worked the problem out in that way. No! It is primarily a compensatory device for facilitating the working of our system. And as such it seems under present conditions to be economically justifiable.

There is also room for excellent work in training executives in trying to help employes as to the uses of these relatively large sums of profit-sharing or bonus money that will come along monthly, quarterly, or half-yearly. There is a danger that too much instalment buying may get under way, too much committment of too high regular, week-by-week outlays. In whatever way it can be done without being too paternalistic, some aid should be offered to people as to how to utilize these relatively large sums of money for permanent capital uses.

Furthermore, I repeat that we have to be sure, in all common honesty with our people, that in any advice we offer about the thrift problem—because they are going to come to us for advice—we must use the maximum of discretion and realize that the criterion of liquidity for those savings, whether they be in group insurance, in company pension plans, savings banks, or building and loan, is crucial. For in the search for liquidity which employes will again make at the time of the turn of the tide in the next downswing, it is to be hoped that they will be able to come off successfully. They have got to be able, in short, at that time to turn their savings, to turn their bookkeeping dollars, so to say, into goods. And one of the jobs of management and personnel advisors on thrift problems is to be sure that up to the best wisdom that we can know, people do not find themselves with savings so tied up or written off that no use can be made of them.

Industry the Unit

I hope I have suggested, at least by implication, with respect to price and wage problems, that what the individual corporation can do, it does within very narrow limits.

The efforts in recent months of more and more trade associations to collaborate more fully on some voluntary basis, to affirm and try to get their members committed to some base level on terms of employment,—on wages and hours—represent a groping for further stability beyond the walls of one corporation which is inevitable. And such efforts are economically sound. The big question, however, still is to prevent, just as it was under NRA, the chiselers and the undercutters from spoiling any voluntary plan. And that means, inferentially, in certain industries, at least, that immediately we will have to make further efforts to support precarious voluntary standards by some type of publicly enforced compulsion. Almost certainly we shall need governmental efforts in certain industries in order to require, to strengthen and to give effect throughout the industry to the labor and fair trade practice standards which would constitute the base below which no corporations of that industry might work.

Other Proposals

I am also of the opinion, though I do not regard it as fundamental, that federal incorporation of corporations which do an interstate business will be a useful lever in this and other connections.

Federal incorporation can also facilitate gradually the kind of uniformity of accounting and of public knowledge of fiscal affairs through the industries of our country which is necessary in the interest of decency, honesty, and sound public relations.

We have, also, as we look ahead to prosperity, in the social security legislation, a cushion which is excellent. We should congratulate ourselves on what we have and go ahead to implement its more effective operation. But, finally, I will have been exceedingly ineffective in what I have said, if I have not made clear that this problem of the improved distribution of our national income,—of our allocating purchasing power to our people so it can flow faster and with greater volume of production—that this cannot and will not be solved just automatically.

The whole problem of income taxation, the whole problem of credit management, the whole problem of social security on a public scale,—these are evidences of a profounder realization of the truth that the problem of distributing purchasing power, which means distributing goods, has passed the point where it can be solved automatically by the free working of the system. It is not being solved that way now. And my contention is it will not be solved that way again. Without professing to know where in detail the responsibility for it is going to rest—and it will not rest at one point but at a number of points—I submit that the distribution of the national income requires managerial planning, managerial thought, as it affects one's own corporation in particular, but equally if not more important as the years go on as it affects industry and the nation as a whole.

The Price of Prosperity

We have new problems. We think the internal industrial problems have been difficult. They are nothing to the kind of problems we have to look out upon now as co-operative agents with our competitors and as collaborators jointly with government. For we will increasingly have to go to work with government to protect and advance the standards which we have in matters of terms of employment and of fair trade practices.

The price of prosperity is a greater sharing of prosperity in terms of payrolls, profits distribution, and lowered prices. The price of prosperity is a greater total product available for use. The price of prosperity is a policy of explicit collaboration with representatives of workers and consumers sharing crucial decisions with managers, within the industry as the unit.

And finally, the price of a more fundamental prosperity is to start upon a voluntary, national coordination of knowledge,—knowledge about demand, about new technological possibilities, about potential productive capacity,—all of which will be a prelude to the kind of democratic planning which hopefully can in the next two generations be devised. And such democratic planning will be the genuine basis, two generations hence, for a true prosperity in which profits will be widely shared and payrolls will yield a higher and a higher standard of life for everybody.

Outline of a Plan for Teaching Scientific Management

By KING HATHAWAY
Consulting Engineer, San Francisco

A well thought-out plan for preparing students for a career in scientific management takes into consideration not only the fundamental background studies in technical subjects but practical experience in managing a real organization. This combination of study and training should be supervised by an instructor who is himself thoroughly grounded in the principles of scientific management as evolved and practiced by Taylor and his associates.

IN THIS memorandum I attempt to set forth my ideas on the teaching of Scientific Management. In doing this I believe I am, to a considerable extent, reflecting the ideas of Taylor—interpreted in the light of my own experience.

It is my conviction that an ideal plan, regardless of whether the student may be preparing himself for teaching Scientific Management, for executive work in any branch of management in any type of industry, or for consulting work in organization and management, should include the following:

Preparatory Stages

1. An elementary engineering training embracing mechanical drawing, physics, algebra, geometry and chemistry such as might be taught in a technical high school.

2. At least one year (preferably two) of practical manufacturing experience, about half of which should be in a "non-scientific management" plant; preferably in one falling in the category that H. P. Kendall termed "systematized."

Course Proper

3. A combination of:

a) Practical training in shop departments, both manufacturing and auxiliary; and in the Administrative and Sales Departments of a business operated under an all embracing system of Scientific Management, and:

b) A course of lecture, study and class room problem work covering principles of Scientific Management and the technique and mechanism for their application.

What I have in mind here is something like the plan which Dean Schneider inaugurated at the University of Cincinnati—the students working in pairs, dividing their time between class-room work and filling an actual position in shops or offices—each pair filling one job.

Such a course should probably extend over four years, during which time the students would progressively fill jobs as laborers (move men, etc.) store-room attendants, tool-room attendants, minor clerical jobs in planning department, positions in the cost and accounting departments, purchasing department, sales department and finally fill the position of general manager of the business.

4. The business used as a laboratory should be a real commercial undertaking owned by the school and every effort should be made to operate it at a profit. It should manufacture a line of product simple enough to permit the various operations involved in its manufacture being readily mastered and satisfactorily performed by the students, and yet involving the typical problems of more complicated products.

5. Classroom work should be co-ordinated with and parallel shop and office work.

6. During the fourth year when students would take turns at filling the major executive positions, they should, when not occupying such positions, visit and make a critical study of the management of a number of typical plants including not only those operated under Scientific Management, but also those which might be classed as "unsystematized" and "systematized" businesses. They should prepare reports such as would be made by a consulting engineer, indicating shortcomings of the organization and management of the plant studied, and should work out and set forth in some detail their recommendations for improvement, and work out to support their recommendations, the necessary mechanism or system for their accomplishment.

Classroom work should, during this period, include study and instruction in regard to existing techniques of Scientific Management as they have been evolved and adapted to meet the needs of a variety of businesses ranging from the simplest to the most complicated. This might also include a certain amount of research and development work such, for instance, as that for which I have indicated a need in my paper on "Methods Study," in the technique of inventory control, of budgeting, etc.

7. A plan in the main similar to that sketched above was, I believe, first discussed by me with Dean Edwin F. Gay shortly after the Harvard Graduate School of Business Administration established its course in Scientific Management. Our idea was to persuade the Tabor Manufacturing Company to move its plant to Cambridge and use it as a working laboratory. This did not work out, but I believe that had it not been for the war and Dean Gay becoming manager of the *New York Post,* we would have found an alternative. Hugo Diemer approached it at Pennsylvania State College as nearly as was possible with ordinary college shops, and a Professor Y. Kunimatsu did something similar at the Nagoya Commercial College in Japan. Dr. Willits at the Wharton School, University of Pennsylvania, was quite keen about the idea after the war, but it was not found feasible at the time to raise the money to establish or acquire the business. As I recall it, we estimated that it would require about $100,000 to carry out the plan on the scale we had in mind. On a less ambitious scale it could be done for a much smaller sum.

8. Mr. Taylor took a keen interest in the training of men in the principles and practices of Scientific Management. It was due to his interest as well as that of Wilfred Lewis that previous to the war, the Tabor plant was extensively used as a training ground.

While Taylor and those of us associated with him felt that practical training and experience such as that gained at Tabor and in other Scientific Management plants was of the greatest importance, it was also felt that it alone fell short and that courses of study and instruction in our colleges were needed to complement the practical training. Obviously, the best results would be obtained if the practical training and the classroom work might be planned and carried out concurrently, under the same direction. As yet this has not, in any adequate measure, been accomplished. Unless something of this sort be done, I fear that much of the benefits of Taylor's work may be lost.

9. Before I end my professional career I hope to see established on a much larger scale an example, such as we had at Tabor, of applied Scientific Management which may serve as a model and demonstration. This is badly needed now and will be needed even more as business revives under economic conditions which will not permit manufacturers to get by so easily as they did during the post-war boom period. Something better than the superficial and degenerate stuff that has passed as Scientific Management will be necessary and I predict a rediscovery of Taylor. Outside of the mass production industries, production in a majority of plants may still be increased from one-third to 100 per cent by an application of straight Taylor System.

10. While I consider object lessons or demonstrations in commercial plants as being of great importance, I do not, however, feel that they may take the place of properly worked-out and administered courses in our colleges which will combine classroom and practical laboratory work. In this I believe that an actual business is just as essential to the teaching of Scientific Management as a hospital is to the teaching of medicine.

11. I do not think such a course as I have suggested should, as is largely the case at present, be given by graduate schools, but rather as a special undergraduate course having its own entrance requirements and subjects.

12. In this outline I have in mind not so broad a course as is usually attempted by our schools of business administration, but rather one specifically dealing with the Principles and Practices of Scientific Management as enunciated by Taylor, as developed and applied by him and his immediate associates, covering all departments or activities of a manufacturing business.

13. As a first step I should recommend hiring a man who has had practical experience in the organization of a business—particularly its planning, manufacturing, and auxiliary activities according to Scientific Management; who is familiar with the technique and mechanisms thereof and who himself has filled various operating functions in such an organization. I should make this man an instructor or assistant professor. I could, perhaps, be of assistance in finding a qualified man.

14. In carrying out such a plan, the first year or two would have to be devoted to organizing and equipping the "business," developing a system of Scientific Management for its operation—all to be done by a selected group of students under the direction of the experi-

enced man whom I have suggested bringing in under the general guidance of the faculty.

Except that during a considerable part of this period of organization the "business" would not be actually operating; the procedure would be almost identical with that which has been followed in actual practice in working out an application of Scientific Management. Also, during this period the details of the course—classroom and "business"—should be worked out. A special classroom course should be worked out for the period of organization.

15. In both classrooms and "business" I should advise limitation and as strict adherence as possible in the matter of reading, lectures, organization and methods, to Scientific Management as evolved and practiced by Taylor and his associates. Unfortunately, many courses in Management have included much material of an irrelevant, inconsistent, and unco-ordinated nature thereby confusing the student. Many have tried to encompass too broad a field which might better be divided into several specialized courses.

16. There is at present available an adequate literature of Scientific Management to serve as text for a course such as I have outlined. A logical schedule of reading correlated and co-ordinated with the practical work should be worked out. Some of this might be classed as preparatory reading; such for example as Taylor's "The Principles of Scientific Management"; Copley's "Frederick W. Taylor"; Le Chatelier's "Preface to the French edition of The Principles of Scientific Management"; Gantt's "Work, Wages, and Profits"; Kendall's "Unsystematized, Systematized, and Scientific Management"; J. M. Dodge's "A History of the Introduction of Shop Management" and "The Spirit in Which Scientific Management Should Be Approached"; my introductory chapter in a series of articles on Applied Scientific Management [1]—and a number of others.

17. Following this we have another division of literature dealing with the adaptation, development and application of the principles and technique of Scientific Management starting with Taylor's "Shop Management," "Notes on Belting"; Gantt's "A Bonus System for Rewarding Labor" (and his other writings dealing with the same subject); Merrick's book on time study and so on through a wealth of articles and papers dealing with each phase and feature from Accounting to Yard Labor. In addition to all this there may be made available much data relating to applications in specific industrial plants.

I should be willing to assist to the greatest extent possible, any institution which may mean business in establishing a course along these lines which I have outlined.

[1] "Applied Scientific Management, Its Applicability in All Areas of Management," by King Hathaway, *Bulletin of the Taylor Society*, Vol. XVII, No. 5, October, 1932, pages 156-161.

REVIEW

$2500 a Year. From Scarcity to Abundance. By Mordecai Ezekiel, Harcourt, Brace and Company, New York, 1936, pages xv, 328, ($2.50.)

The title of the book is the best epitome of its contents. It is a concrete plan worked out in considerable detail for so ordering our industrial machine that it shall yield a minimum annual income of $2500 a year to an unskilled worker, with higher incomes for the skilled and professional workers. This is to be accomplished without attempting to cut down the incomes of the well-to-do or to do away with the system of private ownership and operation of industries for profit. Moreover, the realization of the plan is to result in a steady operation of industry and elimination of industrial depressions.

The scheme sounds too good to be true, yet it cannot be lightly dismissed as impracticable, when we bear in mind that the author, in his capacity of Economic Adviser to the Secretary of Agriculture, had a good deal to do with designing and putting into effect the A.A.A. For the A.A.A. not only attempted what was considered utterly impossible up to that time, but actually succeeded in organizing and controlling the agricultural production of some six million farmers, the most individualistic element in the country.

Having succeeded in the agricultural field, Dr. Ezekiel attempts to apply the general scheme of the A.A.A. to industry, except that the purpose is to be not curtailment of production, as under the A.A.A., but maintenance of it at the full capacity of our manufacturing plants.

He starts out with the premise that our failure to operate at full capacity is due to the lack of an adequate consumer purchasing power; that it is, therefore, necessary to bring up the income of the masses to a level that would make the consumer purchasing power balance the value of our products. Taking $2500 as the minimum amount considered by competent authorities as necessary to maintain a family in health and decent comfort, he points out that our present production is inadequate to provide such an income for every family in the land; that if the national income at its peak in 1929 were divided equally among all gainfully employed persons, the average income per person would only be $136 per month. Yet he holds our present productive capacity, if fully utilized, could be made to yield an income at least 80 per cent above the present.

He demonstrates this by the ingenious use of a few figures and the premise, based on the assurance of production engineers, that the man-hour output of our factories in 1934 was one third more than in 1929. He faces the question of how to break the vicious circle within which production halts because of lack of consumer purchasing power, and consumer pur-

chasing power lags because of inadequate production and employment. He proposes a co-ordinated simultaneous drive under a national plan, or, as he prefers to call it, blueprint, which shall aim at bringing production up to capacity in a few years, starting with an increase of 30 per cent the first year. This simultaneous drive along the entire industrial front will result in a larger income for the workers. However, unless present hourly wage rates are increased, the increased income due to fuller employment would not be large enough to absorb the increased output. A glutted market would again confront the nation as in the past. To prevent this, the national blueprint starting, say, with 1935 as a base, would estimate the retail selling price of the increased production budgeted for the first blueprint year and against it balance the sum total of wages, salaries, dividends and interest (page 81). If the two totals did not balance, the wages would have to be increased or the prices lowered, or both, in order to bring the two in balance. Only a balanced national economy will prevent gluts and insure continued full employment (pages 81-82). This could be done, according to the author, without reducing present profits, through the savings in labor and overhead that would result from capacity operation on a regular schedule. In fact, he believes that the existing profits could be increased to a moderate extent by dividing the savings of increased production on some such basis, as 40 per cent to increase of wages, 40 per cent to reduction of selling price, and 20 per cent to additional profits (page 301).

He realizes that the first schedules will be based on rough estimates, but in the light of similar experience in the A.A.A., he is not worried by the prospect and outlines an elaborate scheme for the gradual refining of the original estimates by taking into account not only the quantitative but also the qualitative changes in the demand for goods and services resulting from the lifting of workers' family budgets from a fifteen to twenty-five dollar level to one of about fifty dollars per week.

Starting with the industrial organizations as developed under the N.R.A. as a basis, he would have each industry managed by an industrial authority on which management, labor and consumers would be represented, with an impartial chairman appointed by the Government. In case of a conflict over wages or prices between the representatives of the contending interests, the chairman would have the final say. "If those decisions are not perfect ones, they could be modified later in the light of experience, but the program would go on" (page 238).

Practical business men will want to know what would happen if "those imperfect decisions" resulted in severe losses to an individual business concern. The author realizes that under our democratic form of government, the scheme would have to meet with fairly general acceptance to stand a chance of being accepted by Congress. He, therefore, proposes to make the plan appeal to the selfish interests of the individual manufacturer by following the plan of the A.A.A. and providing benefit payments to each industrial concern agreeing to operate under the national blueprint.

The government would enter into a contract with each individual concern agreeing to work under the program for its industry. To quote the author:

"This program would be worked out by a committee representing the industry, much like the N.R.A. code authorities. . . . The program would show how much production was to be increased in the industry, how many workers were to be hired and how much wages in each payroll bracket were to be raised (page 167). . . . The industry programs would also show whether the general level of selling prices in that industry was to be lowered, left unchanged, or raised" (page 169).

"Each industry committee would work out and recommend to the national board the rate of benefit payments per unit of product which it felt was necessary in that industry. Concerns which refused to co-operate could hire labor at lower rates and with poorer working conditions, and undersell co-operating concerns. The benefit payments to co-operating concerns would be made large enough to enable them to compete with such non-co-operating concerns. . . . The cost of the benefit payments would be recouped by taxes on industrial production. These "full production" taxes would be levied separately for each industry operating under a program directly upon the products in that industry; they would then have to be paid by all concerns in the industry, regardless of whether they co-operated or not. Co-operating concerns would get back in benefit payments almost all the tax they paid. Concerns which did not sign contracts would have to absorb the tax themselves" (pages 173-174).

In other words, the so-called benefit turns out to be not a positive gain but a negative benefit of escaping a punitive tax. The size of the tax may be as much as "25 per cent of the sales value of the product" (page 303).

Such, in very brief, sketchy outline, is the scheme designed to bring a minimum income of $2500 per year to every worker and to stop industrial depressions. It does not require an elaborate study to discover the fundamental weakness of the plan.

Disregarding political obstacles which it would face in Congress, and the sure outlawing of it by the Supreme Court in the light of the A.A.A. decision rendered after the book was ready to go to press, it is difficult to see how the scheme could prove "economically feasible" which is the test by which the author himself wants it to be judged (page xv).

While superficially the scheme of "benefit payments" proposed for industry seems to be the same as the one that operated so successfully under the A.A.A., fundamental differences between them appear upon closer inspection.

Under the A.A.A. contract, the farmer received as benefit payments for the acreage he agreed to leave idle, a sum of money which was in excess of the amount he would have received for the crops from the idle acres, if he had left them under cultivation. These "benefits" came out of taxes collected by the Government from the processors (flour mills, cotton mills, etc.) who in turn passed on the tax to the consumer through increased prices. The farmer thus received a real money subsidy and moreover, was sure of disposing of his entire crop.

How would the proposed adjustment contract operate in industry? To quote the author again:

"The benefit payments to co-operating concerns would be made large enough to enable them to compete with non co-operating concerns" (page 173), but, as already pointed out, the money would come out of the beneficiary's own pocket in the form of a tax. Instead of a "benefit payment," it should be called a tax rebate, which is all that it is.

As against the positive gain which the farmer got under the

A.A.A., the manufacturer is threatened with a punitive tax if he does not join under the proposed I (ndustrial) A (djustment) A (dministration).

As the contracts have to be signed in advance of the year to which they are applicable, it would be necessary to know in advance what the difference in labor costs was going to be between the co-operating and non co-operating concerns. That would obviously be impossible. The benefit payment would therefore necessarily have to be a "hit or miss" proposition. If it were made large enough to protect the least efficient plant, it would yield an extra bonus to the efficient plants. If it were just enough to protect the efficient plant, it would prove inadequate for the less efficient plants and might result in serious losses to them. Under the circumstances, it would not be so easy for the afflicted manufacturer to dismiss so lightly an "imperfect" decision as the author does in the passage on page 238 previously quoted in which he observes that wrong decisions "could be modified later in the light of experience."

Since the payment of a heavy tax which may reach the confiscatory level of 25 per cent of the selling price of the goods is to be levied on all concerns and is to be rebated only to co-operating concerns, the desire to avoid it would probably drive every concern under the government umbrella. Assuming that such a scheme could be enacted into law and that the heavy tax would force everybody to join, what would then be the basis for the benefit payment? Since it is supposed to be large enough to enable the co-operating concerns to compete with the non co-operating ones and since there are no non co-operating concerns, there would seem to be neither reason nor basis for a "benefit payment."

What is to happen if some of the individual concerns have been unable to dispose of the entire production which they agreed to turn out under the contract with the government? It is true that the purchasing power of the masses, having been brought up to the level of the value of the total production, the output as a whole may be expected to be disposed of. However, since the calculations of the industry authorities are to be only approximate, and since not all the industries and services are to be co-ordinated (especially in the first few years), this balance between production and consumption can at best be only approximate. Under the circumstances, there is bound to be a surplus left which, moderate as it may be for the country as a whole, may prove very burdensome and in many instances, disastrous to the individual concern caught with unsold goods on its hands.

The suggestion will readily occur that the tax money could be used by the government to buy up such surpluses, as it has done on occasions with agricultural products. However, it is one thing to buy up millions of bushels of wheat or pounds of cotton and carry them over to the following year and not so simple a matter to relieve producers of a multitude of special products from jewelry to hardware, from this season's ladies' hats to last season's dresses and other commodities in which changing style is a factor and lack of standardization makes it extremely difficult to determine the price to be paid for each. The author himself rejects this policy of "underwriting" production as too likely to lead to abuse under the pressure of interested parties. Yet, what enabled the A.A.A. to operate successfully was that very feature of an assured market for his product in which the farmer had nothing to lose and much to gain by voluntarily signing up the government contract.

The A.A.A. contract imposed only one restriction on the farmer—the acreage he was to till. It left him free to sell at the market price, it did not tell him how many men he was to employ, or what wages he was to pay. It had no conflicting interests to reconcile. Quite to the contrary, the industrial adjustment control proposed by Ezekiel must deal with all of these elements and predetermine them in the contract. True, it leaves the manufacturer free to run his plant as he sees fit so that the efficient manufacturer can still enjoy a marginal profit over the less efficient competitor; but it prescribes the wages he is to pay, the price level at which his goods are to be sold, and then fails to assure him of a market.

It must be said to the credit of the author that he himself is aware of the many pitfalls which would beset the operation of his plan. Says he:

"There would be drives to get houses built where none were needed; to expand industries in inefficient regions; to reopen coal mines no longer efficient; to boost particular wages out of proportion to the general increase. There would be efforts to set differential wages and prices between regions or between plants, with the sole aim of keeping sub-marginal plants in operation. Every owner of an obsolete plant, every owner of a concern, would hope to be guaranteed profits, and would try to get his Senator to see it was done. Inefficient plants would want efficient ones curtailed. High-cost enterprises would want to stop the "unfair competition" of low-cost enterprises. Many of the vested interests that tried to get N.R.A. to guarantee their profits would try the same thing under industrial adjustment" (page 256).

Yet, he is optimistic enough to feel that the difficulties would not be fatal to his plan. However, there is no evidence in the book that Ezekiel has faced the economic difficulties indicated in this review. Unless they can be overcome, it is difficult to see how the plan can prove "economically feasible."

In spite of these weaknesses the book still remains the only concrete plan that has so far been submitted by an economist for the solution of the riddle of our economic system which is baffling economists and business men alike: how to stop recurrent business depressions and unemployment; how to eliminate the paradox of want amidst plenty and, in the words of the author, how to break down the

> "dam (which) holds back the flood of goods and services our technicians and industries could produce, if we once turned them loose" (page xv).

By N. I. STONE, Consulting Economist, New York.